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REPORT

OF THE COMMISSIONERS APPOINTED TO INQUIRE INTO THE ORIGIN, NATURE, ETC.,

OF

INDIAN CATTLE PLAGUES.

WITH APPENDICES.

1871. 108352

Submitted to the Viceroy and Governor General of India in Council.

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CONTENTS.

	Pages
General Report	i—xxx

APPENDIX I.

Journal of Proceedings, &c.	1—28

APPENDIX II.

General Information, Reports, Evidence, &c.	29—607
Bengal Presidency	29—529
Province of Bengal	29—337
Presidency Division	29—129
Orissa Division	131—134
Dacca Division	135—142
Chittagong Division	143—152
Burdwan Division	153—192
Chota Nagpore Division	193—204
Patna Division	205—222
Bhaugulpore Division	223—235
Rajshahye Division	237—249
Cooch Behar Division	251—262
Assam Division	263—337
North-Western Provinces	339—440
Benares Division	339—367
Allahabad Division	369—395
Agra Division	397—404
Meerut Division	405—414
Rohilcund Division	415—430
Kumaon Division	431—433
Jhansie Division	435—440
The Punjab	441—499
Province of Oudh	501—529
Madras Presidency	531—545
Bombay Presidency	547—576
The Central Provinces	577—590
Burmah and the Straits	591—593
The Andaman Islands	595—603
Ceylon	605—606
Nepal	607

APPENDIX III.

Selected Statistical Statements	609—635

APPENDIX IV.

Report on Cattle Poisoning	637—743

APPENDIX V.

PAGES.

Papers on the Sanitary Treatment of Epizootics . . . . . 745—817

APPENDIX VI.

Cases and Experiments . . . . . 819—896

APPENDIX VII.

Post-mortem Examinations . . . . . 897—953

APPENDIX VIII.

Glossary . . . . . 955—978

Index 979

INDIA
1870
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
BOMBAY
CALCUTTA
MADRAS
Mouths of the Ganges
Gulf of Cutch
Gulf of Manaar
Gulf of Martaban
GULF OF SIAM
Laccadive Islands
Maldive Islands
Nicobar Islands
Andaman Islands
Cape Negrais
Cape Comorin
Palk Strait
Adam's Bridge
Sand Heads
Great Coco Island
Little Coco Island
Preparis Island
Table Island
Ritchie's Archipelago
Mergui Archipelago
Mew Kul Archipelago
Sandheads Pt.
Saugor Island
Diamond Island
Negrais Pt.
Elephant Pt.
Rangoon
Moulmein
Tavoy
Mergui
Amherst
Martaban
Prome
Pegu
Thayetmyo
Henzada
Bassein
Akyab
Cheduba
Ramree
Aracan
Chittagong
Cox's Bazar
Sandoway
Tenasserim
Malacca
Penang
Singapore
Province Wellesley
Dindigul
Madura
Tanjore
Trichinopoly
Salem
Coimbatore
Mysore
Bangalore
Cuddapah
Nellore
Ongole
Guntoor
Masulipatam
Rajahmundry
Vizagapatam
Ganjam
Cuttack
Balasore
Midnapore
Hooghly
Howrah
Burdwan
Nuddea
Moorshedabad
Rajmahal
Dinapore
Patna
Gya
Shahabad
Chupra
Goruckpore
Azimgurh
Jaunpore
Benares
Mirzapore
Allahabad
Futtehpore
Cawnpore
Etawah
Agra
Mynpoorie
Furruckabad
Etah
Bareilly
Moradabad
Rampore
Shahjehanpore
Pilibheet
Oude
Gonda
Fyzabad
Sultanpore
Roy Bareli
Lucknow
Sitapore
Hurdoee
Kheree
Delhi
Meerut
Muzaffernuggur
Saharunpore
Umballa
Loodiana
Ferozepore
Lahore
Goordaspore
Jullundur
Hoshiarpore
Rawul Pindee
Jhelum
Shahpore
Gujrat
Sealkote
Gujranwala
Mooltan
Jhung
Leia
Dera Ghazee Khan
Dera Ismail Khan
Bunnoo
Kohat
Peshawur
Huzara
Kohistan
Swat
Boonere
Yusufzai
Cis-Sutlej States
Punjaub
Scinde
Kurrachee
Hyderabad
Khyrpore
Shikarpore
Jeypore
Ajmere
Marwar
Mewar
Kotah
Boondee
Gwalior
Bhopal
Indore
Malwa
Rewah
Nagpore
Berar
Chanda
Sirpoor
Hyderabad
Aurungabad
Ahmednuggur
Poona
Satara
Sholapore
Belgaum
Dharwar
Kolapore
Ratnagiri
Goa
Canara
Coorg
Wynaad
Travancore
Cochin
Palghat
Coimbatore
Trichinopoly
Tanjore
Madura
Dindigul
Salem

APPOINTMENT OF COMMISSION.

From E. C. BAYLEY, ESQ., *Secretary to the Government of India,* HOME DEPT., *to Staff Veterinary Surgeon* J. H. B. HALLEN, *Bombay Army,—No.* 5182, *dated Fort William, the* 27*th November* 1869.

The attention of the Governor General in Council having been directed to the numerous outbreaks of disease among cattle which have of late years occurred in India, it has been determined to appoint a Commission to enquire into the whole subject, with a view to ascertaining the true nature of the murrains which have prevailed, and the best mode of dealing with them in future.

2. I am accordingly to inform you that you have been appointed President of the Commission, which is to be, for the present, constituted, as shown below:—

Staff Veterinary Surgeon J. H. B. HALLEN	*President.*
Assistant Surgeon KENNETH MCLEOD, M. D.	*Members.*
Mr. A. C. MANGLES, B. C. S.	
Baboo HEM CHUNDER KERR, Deputy Magistrate and Collector ...	

3. The Commission will assemble in Calcutta with the least possible delay. The other members have been requested to join you there.

4. It will be the duty of the Commission to study the recorded accounts of diseases from which any wide-spread mortality among cattle has occurred. The papers herewith forwarded will be found to contain much information on the subject.

5. The Commission will also consult the Governments of Bengal and the North-Western Provinces, and the Chief Commissioner, Oudh, as to the districts which would, at the present season, offer the best field for the observation of the principal epizootics. Having selected one or more such districts, the Commission should proceed thither and prosecute their enquiries by observation and investigation on the spot. The 24-Pergunnahs should probably be one of the districts selected.

6. On the conclusion of their inquiries, which, it is expected, may be finished in six or eight months, the Commission should submit a full report showing the nature of the diseases prevalent, and the measures, preventive and curative, which they would recommend to check their ravages. The contagious character of these murrains, and their connection with, and analogy to, rinderpest, should specially engage the attention of the Commission. As bearing upon this point, I am to say that the Commission will be furnished with such papers as are available on the subject of the outbreak of rinderpest in England, and the measures adopted to meet it. The Governments of Bengal and the North-Western Provinces, and the Chief Commissioner, Oudh, have been requested to afford the Commission all the aid in their power, and to issue instructions to that effect to the local authorities of such districts as the Commission shall decide upon visiting.

7. A copy of these instructions has been furnished to the other members of the Commission.

8. A further communication will be made to you as to your remuneration while engaged in this duty.

From J. GEOGHEGAN, ESQ., *Under Secretary to the Government of India,* HOME DEPT., *to* MAHOMED ALI JAN, *Deputy Collector,—No.* 989, *dated Fort William, the* 19*th February* 1870.

I am directed to inform you that the Governor General in Council has been pleased to appoint you to be a Member of the Commission which has been formed for the purpose of inquiring into the subject of cattle diseases prevalent in India.

2. A copy of the instructions* issued to the Commission is enclosed for your information and guidance; and I am to request that you will be good enough to join the Commission in Calcutta as soon as possible.

* No. 5182, dated 27th November 1869, with enclosures.

From W. M. SOUTTAR, ESQ., M.. A., *Officiating Under Secretary to the Government of India,* HOME DEPT., *to* J. G. CHARLES, ESQ., B. C. S.,—*No.* 3049, *dated Simla, the* 23*rd June* 1870.

I am directed to inform you that the Governor General in Council has been pleased to appoint you, with effect from the 29th instant, to be a Member of the Commission which has been formed for the purpose of enquiring into the subject of cattle diseases prevalent in India, in succession to Mr. A. C. Mangles, resigned.

2. A copy of the instructions* issued to the Commission is enclosed for your information and guidance; and I am to request that you will be good enough to join the Commission as soon as possible.

* No. 5182, dated 27th November 1869, with enclosures.

REPORT

OF THE

INDIAN CATTLE PLAGUE COMMISSION,

WITH APPENDICES.

REPORT

OF THE

INDIAN CATTLE PLAGUE COMMISSION.

I.—Introductory.

Introductory

The instructions originally communicated to us assigned the Provinces of Lower Bengal, the North-Western Provinces, and Oudh as a field of labor, and directed that the investigation should consist of a study of recorded outbreaks of cattle disease, and of local observation and inquiry in selected districts. The objects which were particularly to govern the conduct of the investigation and the drawing up of a report thereon were—

Objects of the Commission.

(1) to determine the nature of the diseases prevalent;

(2) the contagious character of these;

(3) their connection with, and analogy to, rinderpest; and

(4) the preventive and curative measures which might check the ravages of murrains among cattle.

Mode of inquiry.

2. These instructions and objects have been steadily held in view during the protracted and laborious inquiry which commenced on the 21st of December 1869, and terminated on the 31st of January 1871. It was realized at a very early stage of the proceedings, that, to study the question of prevention in an exhaustive manner, the conditions under which horned stock exist in India must be ascertained in detail, and that very numerous collateral questions bearing more or less directly on the question of prevention of disease must be made a subject of consideration. The whole scope of the investigation thus extended is summarily exhibited in the form printed at page 28 of the Appendix, which has served as a guide in eliciting oral testimony and a means of obtaining written information. As this form, which was most carefully considered at starting, embodies the whole spirit of the inquiry, it will be convenient also to adopt it as the groundwork of this general report.

Extension of sphere of inquiry.

3. At first, the limitations imposed by the original instructions were carefully observed, but it was found that an expansion of both the field and subject of study would be attended with advantageous results. It became apparent, in the first place, that very serious events were occurring in the Punjab, involving the destruction of cattle by thousands, and, from the descriptions of the murrains causing this havoc which were received, it was impossible to predicate their nature or advise as to their treatment. A local investigation in this province was accordingly suggested, and authority was readily obtained from the Government of India to extend operations thither (Appendix, p. 451). It was next found that important information was available from other provinces and parts of India, which might materially affect conclusions which it was sought to place on the widest possible basis. More particularly,

The Punjab.

Other provinces.

Madras.

the proceedings of the Madras Government in the matter of cattle murrains were fraught with peculiar interest and material instruction. Some reports had been received from places beyond the limits of the Bengal Presidency, and it was considered desirable to obtain a copy of all that had transpired elsewhere and initiate inquiry where none had been made. With this view a letter was addressed to Government moving for all the information which existed or could be got (Appendix, p. 542), and much valuable matter from Madras, Bombay, the Central Provinces, Burmah, and the Andaman Islands was thus obtained. The present inquiry has thus become imperial in its scope, though the Bengal Presidency is necessarily more prominently and elaborately represented. Through the courtesy of the Colonial Government of Ceylon, the very admirable report, dated October 1869, of the Commission which had been appointed in March 1868 to investigate cattle plague was obtained, and became another element in the subject-matter of consideration. Again, in some districts much of the mortality among cattle was attributed to the system of cattle-poisoning alleged to be perpetrated by dealers in hides, and it was considered necessary to work out this question in detail. A considerable body of evidence was procured, tending to place the facts of this question in a true and proper light (Appendix No. IV).

Bombay, Central Provinces, Burmah, and Andaman Islands.

Ceylon.

Cattle-poisoning.

Proceedings of the Commission.

4. While the objects of our Commission were those above indicated, the principles upon which the work has been carried on have been as follows:—

Local observation.

(1) local investigation and actual observation have been held as the most important means of arriving at accurate results;

Personal investigation.

(2) personal inquiry on the spot, in the locality where the events had occurred or were occurring, and from the persons best informed regarding, or most concerned in, the matter, was considered as second in importance; and

Written reports.

(3) when neither of these means were available, written reports were sought from the most skilled and competent persons likely to give the most reliable information.

Arrangement of the report.

5. The result of these endeavours has been the accumulation from every part of India of a large mass of material of very various value. When the time arrived to arrange this material so as to place it in that shape in which it should be most useful for information and aid with regard to future action, the question of its arrangement became rather an embarrassing one. It was finally resolved, as the best of many possible alternatives, to pursue a strictly local principle of classifying and arranging the matter. This plan was adopted as the most simple and convenient, and likely to be the most useful, because, whatever action may in future be adopted in regard to this question, the details must vary according to local circumstances and requirements; and while the general facts and principles common to all places are set forth here, and the general indications of action may be embodied in one set of rules or one enactment, the application of such rules or enactment must depend upon, and vary with, local conditions. These, as far as they have been ascertained, are set down under each province, division, or district, and local inquiry anywhere may be carried on in continuation of, and with the light afforded by, the local data furnished in this report. Indeed, we contemplate as the perfection of possible energy in this matter strictly local investigation—guided and corrected by the facts generalized from many local inquiries, and strictly local action—directed and modified by principles founded on these general truths; and the more particular such inquiry and action become, the lower they descend—to townships, villages, hamlets, and households—it is obvious that the greater good will accrue in the end. We have thus striven, in the mode of our inquiry, in the construction of our report, and now in emphatic suggestion, to impress the futility of mere reports to a central and remote office or individual, and the necessity and efficacy of careful, continued, patient and practical local inquiry and effort. Our aim has been to render this report available for intelligent inquiry and action all over India, and to furnish as much general information and as many local data as may enable district officers or their subordinates to inquire and act to best

According to locality.

Importance of local observation.

advantage. Much yet remains to be known, and nearly all to be done. This report contains or refers to all that is known up to the end of 1870, and prescribes what ought to be done. There should be no necessity for again working out the subject generally as far as the past is concerned, but there remains the necessity of continuing the inquiry in every district of India, and these developments ought to be an expansion of the general, and in most cases imperfect, data contained in this record. Local attention, investigation, and action, by one skilled agent or by a committee of persons locally interested, is the first and principal recommendation we have to offer, and we would very strongly urge that mere reporting is a very small part of what ought to be done, and that reporting prompt action adopted with success in staying mortality is the only sort of report which should in future be made. Catalogues of unintelligible names, the heterogeneous stringing together of hearsay symptoms and tabular exhibitions of unreliable figures, have hitherto represented, save in a few exceptional cases, the summit of energy. In future, names and symptoms should be reduced to the minimum, a few familiar names should represent well-known symptoms, and figures and tabular statements should exhibit work done, sickness and mortality reduced, and disease stayed by the prompt adoption of rational measures. These remarks have been made *in limine* under the conviction that, hitherto, there has been little or no practical observation attempted in this matter, and that the serious subject of cattle murrain has, in common with too many other matters, come to be treated in offices upon folios of foolscap, instead of in the village, the pasture field, the pen or the byre. Reporting, registering facts, comparing them, and drawing up general reports are of course necessary, and we trust that year by year, commencing with 1871, the progress of this important matter will be duly chronicled; but unless the local action is such as we have above indicated, reports, however careful, can never advance the question one single step, or contribute to the saving of one single life.

Inquiry complete up to the end of 1870.

Need of further inquiry.

6. In order to place the Government in possession of the means and manner by and in which our facts and conclusions have been attained, we have thought it proper to place on permanent record a short journal of proceedings (Appendix No. 1). The localities which we have visited and the work we have done are there briefly indicated and described. Our earliest experience was gained in Assam, where a severe and widespread murrain existed, and here, by careful observation and systematic questioning, we became familiar with at least one form and phase of the murrains devastating the districts of Bengal. Next, in the Nuddea District of the Presidency Division, a considerable amount of fatal murrain was found to prevail, and an equally searching investigation was made as to its nature, extent, and effects. Furnished with the teachings acquired in these places as a standard of comparison, our stay in districts subsequently visited was shorter, our progress more rapid, and proceedings less elaborate. Some interesting information was collected in Calcutta, and in several places on the west of the Hooghly—in the districts of Midnapore, Hooghly, and Burdwan. On the 22nd of April we proceeded to the North-Western Provinces, and until the 5th of June were engaged in making inquiries throughout the districts of the North-West and Oudh. From this time to the 22nd of June various districts of Bengal, south and north of the Ganges, were visited, and on the 5th of July another tour to the North-West and Punjab was undertaken. This tour was completed on the 15th of September. From this date to the 10th of December inquiries were made in and around Calcutta, Diamond Harbour, Darjeeling, Serampore, Bood-Bood, and Culna, and during the remainder of December and the whole of January cattle were treated and experiments conducted at Culna in the Burdwan District. The localities visited by us are exhibited in the map at the commencement of the report, from which it will be seen that the field of actual observation has been an extensive one.

Journal of proceedings.

Assam.

Nuddea.

Calcutta, Hooghly, &c.

N. W. Provinces.

Oudh.

Punjab.

Darjeeling, &c.

Hospital at Culna.

7. In the construction of this report, it will be observed that all details have been thrown into the Appendix; that all the information which has been already published is epitomised, the reference being given, and in the event of the

Construction of report.

Plan of report.

book or document being out of print, or difficult to get, an extract reprinted; that a historical sketch has been given for each division of Bengal and for all the remaining political divisions of India under British rule, showing the years in which murrains prevailed and the main incidents of these; and that, by means of careful preces, summaries, &c., this general resumé has been relieved of all but the leading conclusions and the principles of future action. These we shall now set forth in the order already indicated, namely, according to the form at page 28 of the Appendix. The several subjects preceding the consideration of the murrains themselves will be shortly touched upon, as they affect the prevalence or spread of rinderpest, whose existence, nature, and contagiousness must be taken for granted; practical hints as to improvements of stock will be given as occasion arises.

II.—Conditions affecting the Prevalence of Murrains.

Topography.

8. Topography has been found to have an important bearing on the prevalence of murrain.

Insulation.

(*a*). If an absolute conclusion can be drawn from one example, the history of cattle plague in the Andaman Islands (Appendix, p. 595) disproves the allegation of spontaneous origin, and proves that importation is the main, if not only, cause of outbreak of rinderpest and foot and mouth disease even in tropical malarious localities where endemic diseases are rife among men and even sheep. The lesson to be drawn from the experience of this settlement is, that if we would preserve the stock of an area free from disease, what the physical conditions of an island impose as regards outside stock must be imitated artificially—that is, localities must be, in respect of importation of disease, insulated.

Hills.

(*b*). Hills oppose another physical obstacle to cattle association, and provide for a certain amount of isolation of stock (see Appendix, p. 275). We have accordingly found that, as far as our information of hills and hill stations permit a general statement, disease is not so frequently met with upon them, and, when it does occur, its importation is always traceable (see Appendix, pp. 253, 534, 433, and 607), and there is never any suspicion of spontaneous origin, as is often the case in the plains.

Rivers.

(*c*). Large rivers oppose a physical obstacle to the spread of murrain, and this should be taken advantage of in endeavouring to cope with them. The best illustration of this fact is the outbreak of disease in North Luckimpore in March 1869, while it did not make its appearance in the portion of the Luckimpore District south of the Burumpootra till June 1869, and it was then derived from the south (see Appendix, pp. 58, 269, 289). The importance of guarding ferries, which are a means of rendering futile the protection which rivers afford, is obvious (see Appendix, p. 290).

Grazing-grounds.

(*d*). The influence of luxuriant pasture tracts where cattle are herded and grazed, drawn from many points, mix together, and are then dispersed to their villages, in providing an abode and nursery of contagious diseases among stock, is frequently pointed out in the Appendix (see pp. 225, 219, 386, 419, and 505). The whole tract of the Himalaya Terai, the Orissa Gurjâts, the Rajmehal Hills illustrate the truth of the general assertion, and this widespread and necessary practice furnishes a kind and magnitude of conditions eminently calculated to maintain and spread contagious disease that it is difficult to meet by any general suggestion or rule. The problem of prevention and limitation must here be worked out locally, as, while the general practice and its tendencies and dangers are similar, there are local circumstances and variations which must govern the thought and action to be taken.

Roads.

(*e*). The influence of roads in spreading disease is well known and illustrated in the case of Ceylon, Darjeeling, &c.

Civilization and clearing.

(*f*). Increasing civilization, which means in India clearing of jungle, making of roads, extended agriculture, more communication with other parts, buying and selling, &c., provides greater facilities for the spread of contagious diseases of stock. This is illustrated in the case of Burmah.

(*g*). Our observations have been mainly conducted on the plains and upon an alluvial formation, but nothing that appears in these papers tends in any respect to establish a relation between any kind of country and soil and murrain except in as far as variations of this sort modify the other life conditions of stock, namely, number, association, &c. In other words, there is no evidence to show that cattle disease may and does not prevail on any area, whatever its geology, soil, altitude, &c. Influence of soil.

These considerations go to establish the general statement that there is nothing in the geology or topography of India to render these diseases inevitable or irradicable, and place their causation on less difficult and insuperable conditions, thus giving a greater promise to repressive effort. Disease not soil-born.

(*h*). The geographical distribution of murrains may be appropriately considered here, and with regard to the two principal forms of them, rinderpest and foot and mouth disease, suffice it to say that, wherever observation or inquiry has reached, they have been found to prevail or to have recently prevailed. The maps at the end of this report show the localities where murrains were reported to exist during each of the 11 years 1860—70, but it was found impossible to indicate the affected areas otherwise than by a dot, because the extent of country affected could not be accurately portrayed, and it is certain that the *reported* murrain has formed but a small share of what really existed. We cannot suggest a spot in India in which we believe that both forms have never occurred; but while this is true, it is true also that in any one year the geographical distribution of murrains will show large blanks of murrain-free divisions and districts, or smaller areas. Were inquiry more minute, these blanks would probably be smaller and fewer than they are believed to be, and in places such as Calcutta, where cattle are massed, an annual murrain map would show an annual murrain tint; but it is these blanks which give cause and room for action. If they did not exist, action would be impossible, and the aim of action must be to preserve from year to year the blanks which exist, and extend them. In a district checkered, as many, or most, will be found to be, with murrain patches, action must be correspondingly detailed and difficult. It is hardly necessary to suggest that an annual murrain map for India, showing accurately the areas affected, would be of itself a very interesting and important record. Geographical distribution of murrains. Murrain map.

9. The number of cattle in a certain area has in no instance been precisely estimated, nor can any reliable general statement be made with regard to the effect of crowding on the prevalence of murrain. The general rule may be accepted as true, that a sparsely scattered stock affords an unfavorable condition for the spread of disease, and a crowded stock the reverse; but the universal practice of herding invariably provides for more or less massing, and even in cases when an estimate of stock to area would show a low figure, this practice provides for all the conditions of dense crowding and its necessary concomitant of incessant intercourse. The state of the byres and oilmen's sheds of Calcutta, detailed at pages 69—75 of the Appendix, affords the best illustration possible of the evil effect of crowding. When disease enters these byres or sheds, it does not leave a single susceptible animal unattacked. One very important fact regarding the proportion of stock to owners and land was elicited at Chooadangah in the Nuddea District, namely, that owing to the increased relative proportion of land brought under cultivation, the consequent decrease of pasture land and the increased number of persons engaged in agriculture, the number of cattle which each owner possesses has been reduced to the minimum; whereas in former years ryots always owned a surplus of cattle (see Appendix, p. 100, evidence of Godie Joardar and others), and, as the people of Assam now do, held cattle as a representative of means or wealth; now their value consists in their work as agents for agricultural production. The same is true of dairy stock which, in the presidency division, is held as a means of producing milk, ghee, &c., which are the source of gain. The effect of increased demand of animals for slaughter, on both number and value, is testified by many witnesses (see Appendix, p. 102), and is no doubt important and true. As the surplus and unproductive stock of the country becomes less, as cattle become less a Number of cattle. Herding. Calcutta byres. Relative diminution of stock.

representative of wealth, and more an agency of wealth, the subject of losses by murrain will assume a greater importance and attract a closer attention and interest, and the necessity for repressive measures becomes more declared and pressing.

Breeds.

10. A consideration of the breeds of cattle does not form part of our instructions or purpose, but a great deal of information on this subject is scattered through the appended evidence. While, with very few exceptions, all the cattle which passed under our observation belonged to the humped or Zebu kind, the quality varied greatly, from the puny degenerate Assam bullock to the magnificent Hissar, Hansi, and Goozerat animal. It is curious to note that while the Assam cattle are the worst in India, the Assam buffaloes are undoubtedly the finest. This results from an intermixture of the Bengal breed with the wild buffalo, and shows what judicious breeding may accomplish. We commend the subject of systematic improvement of breed to the notice of those interested in stock; but we would strongly endorse the opinion of Mr. John Stalkartt (Appendix, p. 79), who speaks with the authority of practical experience, that the introduction of foreign breed into India is a mistake. In truth, some of the Indian breeds cannot be improved on, leaving adaptation to the country and its wants out of sight. We would also draw attention to the evidence of the Revd. E. H. Higgs (Appendix, p. 315), who experimented successfully in improving native breeds. On the other hand, Baboo Joy Kissen Mookerjee, an influential and intelligent Zemindar of Hooghly, states (Appendix, p. 174) that his experiments in breeding have not been successful. This is therefore a question for careful trial. The results of systematic breeding, as observed by us in the Hissar Stud Farm, show that fine animals for all purposes may be obtained by the judicious crossing and feeding of native stock.

Improvement of breed.

Mr. J. Stalkartt's evidence.

Revd. Mr. Higgs' experience.

Baboo Joy Kissen Mookerjee's opinion.

Value of cattle.

11. The value of cattle has a more intimate relation to the subject of cattle plague. It will be observed that the universal testimony obtained everywhere is to the effect that within the last ten years the price of stock has risen. The rise is variously estimated at 10, 20, 25, 50, or even 100 per cent. (see Appendix, *passim*). This result has in some cases been attributed to mortality from disease,—and a temporary local rise in price does no doubt take place occasionally from this cause,—but the universal rise of the price of horned stock has by all our most intelligent informers been attributed to other causes of wider and deeper influence than loss of cattle by disease, which is local and transient. Stock has become more valuable and money cheaper. The greater demand for produce, the keener cultivation, the increase of cultivated area, and the consequent enhanced demand for cattle are truer reasons, and in some places the influence in this direction of an increased agricultural activity is most marked (see evidence recorded at Chooadangah, Appendix, pp. 97—117). The effect of the tea enterprise in Assam is an excellent illustration, because the people have, even after severe murrain, a surplus of cattle (see Appendix, p. 312 and elsewhere). From this it follows:—

Prices increased.

Causes

1*st*.—That the loss of cattle is a more serious matter now than it was to all agriculturists.

2*nd*.—That the need of adopting measures to protect against loss is more urgent now, and yearly becoming still more so.

A striking, and no doubt true, observation on this subject is made by the Commissioner of Kumaon (Appendix, p. 433), who remarks that a *māntuar* bullock or buffalo, that is an animal that has recovered from an attack of *mān* (rinderpest), is more valuable than one which has not had the disease. The same fact is mentioned in an official report on cattle disease in the Netherlands (1st Report of the English Cattle Plague Commission, Appendix, page 187).

A *māntuar* bullock.

While the principal value of this observation is the practical demonstration it affords of the circumstance that one attack protects against a subsequent one, and of the value of a rightly devised and executed system of inoculation, it also shows that the existence of murrain has in some places had a palpable influence on the price of stock. It may reasonably be expected that, as agriculture

spreads, and the value of stock becomes still greater, the effect of murrain on price will become more striking, and that the circumstances of numbers diminished in relation to demand, use, and need, with the inevitable enhancement of price, will combine to urge the subject of murrain more and more strongly and closely on the attention of Government.

Census of cattle.

12. The problems suggested by the preceding paragraphs are capable only of complete solution locally from local study, but the conditions of their study are incomplete without a periodical census and correct registration of other data involved relating to the agriculture of the country. It would be a most important matter to ascertain accurately the price of cattle of different kinds at the principal fairs and local markets, and publish it periodically in the provincial Gazettes. The necessity of this is obvious, and its absence an evidence of the backward and primitive condition of matters relating to agriculture and stock in India. We accordingly submit this as a recommendation to which we attach very considerable importance, and which is capable of easy accomplishment at once, while the enumeration of cattle, though we feel it our duty to urge this also, is a matter of much greater difficulty, and its results subject to much greater doubt.

Market prices.

Uses for which cattle are employed.

13. The uses for which cattle are employed form an important part of the consideration of the conditions of their existence, which render them more or less obnoxious to attack by epizootic or contagious disease. This subject has been so amply discussed in the paper printed at page 799 of the Appendix that we need only refer to it here, and remark that all our inquiries, in which we held the facilities for the spread of disease depending on the circumstances, life, and employment of stock constantly in view, have amply confirmed every word that is written there. These circumstances may be briefly recapitulated as follows:—

Association at work.

1*st*.—Cattle associate freely on roads, paths, and fields during the cultivating season in working hours.

Association at pasture.

2*nd*.—They associate on the pasture fields (where there are pasture fields) during non-working hours, generally the afternoon.

Housing.

3*rd*.—They are housed together in confined sheds.

Herding.

4*th*.—During non-working seasons they are herded. The stubble fields are then available for pasture, and the cattle of different villages meet and associate indiscriminately. This was particularly noticed in Assam, where a circle of villages surrounds a large rice tract (*pittar*) in which, when the crops are cut, hundreds of cattle roam at will.

Herding and droving.

5*th*.—During the same season, when not wanted in other places, they are driven in droves to more fertile tracts (see Appendix, pp. 227, 512, 451, 493, and 513.) They contract disease there, and bring it back to their villages when they are wanted for cultivation.

Draught and burden.

6*th*.—As beasts of draught and burden, they travel long distances (see Appendix, p. 179, villages of Katgora and Palapooker) along roads, resting in bazaars or serais (see Appendix, p. 219), and, meeting other cattle there, contract or disseminate disease.

Dairy.

7*th*.—As dairy cattle, they are pent closely up in confined sheds and the stock is periodically renewed; and if a new purchase brings disease, it spreads unfailingly among the rest (see Appendix, p. 73).

Slaughter.

8*th*—For slaughtering purposes cattle are droved and driven on roads, and may contract and scatter disease without limit (see Appendix, pp. 66, 92, and elsewhere).

Absence of fencing.

9*th*.—There is a complete absence of any system of *fencing* in India, or that artificial boundary of property or farm which elsewhere supplies one of the main conditions and most essential postulates of a system of segregation.

In a word, the facilities for the spread of a disease are infinite, and in considering the question of local remedial measures, these facilities must be studied

Local inquiry necessary.

in elaborate detail. While, generally, similar practices prevail over the whole country, which may be described in a few words, our observations exhibit a diversity of local peculiarities which must be carefully inquired into as a preliminary to any action. Such a practice, for instance, as that described by the villagers of Kamnara near Burdwan (see Appendix, p. 181)—driving milch cattle to Howrah during the cold weather—would have a most powerful influence in spreading disease, and must be known in order to have this influence obviated. Much of this kind of information is given in our report, but the local conditions governing the problem of prevention must be exhaustively studied in each locality before effectual preventive measures can be devised.

Housing of cattle.

14. The housing of cattle is an almost universal practice, and, as a rule, we have found the sheds used well adapted for their purpose. On this head we have no suggestion to offer, except that, in some instances, they are manifestly overcrowded. The Calcutta cattle dairies, for instance, are as crowded as they can be, and the arrangements for removing filth are exceedingly defective (see p. 71).

Feeding and watering.

15. The system of feeding and watering cattle has invariably been inquired into, and the Appendix contains abundant details upon the subject. It is evident that there is room for reformation here. In some places feeding is well understood and is reduced to a system, as in the Calcutta dairies and oil sheds, where the kind, cost, and effect on milk of various plans of feeding are well known (see Appendix, pp. 70, 75.) Again, in the district of Nuddea the feeding of plough and dairy cattle, in relation to work and produce, is well understood (see Appendix, pp. 102, &c.); but, as a rule, feeding and watering are left very much to the will of the animals. The evidence of Mr. Farrell upon this point (see Appendix, p. 294) is of more extended application than merely to the localities visited by him. There are several specific results of this want of care and system.

Effects of improper feeding.

1*st.*—During the cultivating season, when much land is under crop, pasturage is reduced to a minimum, and work is severe; unless fodder is systematically stored and cattle are stall fed, they fall off in condition. In Nuddea the cultivators had, owing to the want of pasture, learnt to store and stall feed; but this is by no means the case invariably.

2*nd.*—During the dry months, in many places, the herbage is so scanty and dry that innutrition, wasting, and impaction (Fardel-bound) are the consequences. A good illustration of this was observed at Mohunneah in the district of Shahabad (see Appendix, p. 220), where, during the two days we stayed there, two fatal cases of this sort occurred, and were examined.

3*rd.*—The effect of bad pasturage in causing serious mortality is exemplified in the *bhooknee* of the Gujranwallah and Jhung bar in the Punjab. This subject has been treated at pages 445 and 448, and is frequently illustrated in the evidence recorded in the Punjab.

4*th.*—In 1869 an absolute scarcity of fodder caused, in some districts of the North-Western Provinces, a great loss of cattle by starvation; this resulted from simple improvidence.

5*th.*—After the first shower of the rains a delicate rich growth of young shoots takes place. The cattle, previously starved and accustomed to the driest pasture, browse eagerly on this sweet succulent herbage, and the consequence is a fatal attack of hoven. This is a universal observation, and many cases of the mysterious *puschima* of Lower Bengal would appear to consist simply of this condition thus caused.

6*th.*—The effect of a too rich pasture after a dry season in causing "quarter-ill" is well known and clearly brought out in Mr. Dawson's reports on the Hissar murrain of 1864 (see Appendix, p. 453). The rational remedy of exercise and change of pasture has been adopted there as a standing rule (see Appendix, p. 456, evidence of Hansari).

7*th.*—The evil effect of eating grass which has been submerged is very frequently alluded to in the evidence and reports (see Appendix, pp. 39, 117), but

no opportunity occurred of studying practically the effects of this kind of pasture. It is a subject worthy of attention.

8*th*.—In many places particular kinds of grasses and herbs have been credited with causing disease (see Appendix, pp. 386, 497, 498). The only observation on this head which we had an opportunity of making was at Chooadangah, where two cases of death from eating castor-oil seeds and leaves were seen and examined *post-mortem* (see Appendix, p. 9). These considerations are sufficient to prove that the study of the food of cattle and the storing of fodder is a desideratum. On this subject much information has been collected, and it is one worthy of practical attention. The various kinds of grass available for cattle food in different places have been carefully enumerated, but, for practical purposes, this kind of information must be more local and exact. The serious question of pasture land is one which we would particularly bring to notice. The old religious rule which prescribed the reservation of a certain proportion of the surface for pasturing cattle (see Appendix, p. 815) has in many places been forgotten in the struggle of increased remunerative cultivation (see Appendix, pp. 78, 103, 174). This matter demands special inquiry and treatment, and is foreign to the subject in hand, but we allude to it in order to record our belief that it is a most important one, and deserving of careful and practical attention. Pasture land.

The watering of cattle is conducted on the same hap-hazard principle as their feeding. Watering-places afford a means of spreading disease (see Appendix, p. 260), and it is highly probable water itself may. In the centre of a village of Etawah—Fukeerpore—we saw a small pond containing gruelly-green fluid in which cattle wallowed at will, and on whose banks cases labouring under rinderpest were seen. A place of this sort is nothing else than a pit in which healthy cattle bathe in diluted rinderpest discharges. It was an extreme case, but by no means an uncommon one. The single case of rinderpest which had occurred in a village of Burdwan—Gungpore (Appendix, p. 180)—had not only been housed and fed separately, but watered in a separate pond. This matter of common watering-places must not be lost sight of in any scheme of segregation. Enough is not known of the contagium to say that it does or may act through or by water, but the necessity of the precaution is obvious. Cattle labouring under rinderpest have an abnormal thirst and make for ponds and watering-places, and the observation has frequently been made that their carcasses are more apt to be found near tanks, ponds, &c. (see Appendix, pp. 260, 275, &c.) The quality of the water which cattle have to drink is in some cases very bad, as in the instance of the Calcutta dairies (see Appendix, p. 71). A filthy fluid containing all kinds of abominations is plainly improper. Watering.

16. The subject of herding is undoubtedly one of the most important in considering the spread of contagious disease and its prevention. The following are the principal kinds of herding practised in Bengal:— Herding.

1*st*.—Herding for pasture, when the cattle of different homesteads or villages are collected and driven to a fallow field or tract where they mix together.

This practice is universal, and a necessary adjunct of the village system.

2*nd*.—Herding for pasture when cattle are driven to other and distant places for pasture (see Appendix, pp. 219, 225, 242).

This practice is a very frequent one.

3*rd*.—Herding on breeding tracts (see Appendix, pp. 419, 421, 422, 512, &c.)

4*th*.—Herding and droving for market (see Appendix, pp. 115, 387, &c.)

5*th*.—Herding and droving for sale amongst villages (see Appendix, pp. 384, 366, &c.)

All of these varieties of herding, which have been made a part of the local inquiry and are carefully described in the Appendix, are simply so many agencies of the spread of infectious diseases, and in any plan of preventive effort they must, as such, be minutely taken count of.

Supply of stock.

17. The necessities of replenishing stock furnish another channel of spreading disease, and the modes of replacing losses by age, injury, or disease must be studied with a view to preventive action.

Local breeding

Local breeding is a universal thing in Indian villages, but it does not serve to supply the demand of populous districts where agriculture is briskly carried on (*e. g.*, 24-Pergunnahs and Nuddea), while in other places (*e. g.*, Palamow, the Terai, and Orissa) where pasture land is abundant, breeding exceeds the local demand, and thus a definite system of cattle movement and trade has arisen.

Streams of cattle movement.

The streams of cattle movement do not, however, depend solely on agricultural demand, but, where cattle are used for their meat or milk, an additional demand arises. These causes determine certain constant routes of cattle droving which are liable to little variation.

Many of these have been studied and displayed in the Appendix, but these streams must be accurately defined in each district. We need only here refer very generally to the wide radii of cattle movement which the wants of Calcutta have created, to the constant stream of cattle from the breeding grounds of the Terai to the central districts, and to the stream of buffaloes proceeding from Bengal to Assam every cold weather (see Appendix, pp. 261, 333), to illustrate this point. In times of impending murrain these streams must be studied, watched, and, so to speak, temporarily dammed up. The principal circumstance connected with breeding which tends to spread disease is the hap-hazard way in which it is conducted. Bulls, whether Brahmini bulls or village bulls, are allowed to roam at will, and may carry disease about with them without hindrance.

Markets

18. The subject of markets has been held prominently in view, and much information regarding cattle fairs will be found throughout the Appendix. Their influence in spreading disease need not be urged here; it is too well known: but the private bargain system, or village-to-village or person-to-person dealing, is not without its dangers. Mr. Farrell in his evidence (p. 297) gives two good examples of disease spread in this way. We had, at Puddobelah, in the Nuddea district, a good opportunity of observing what a local market may do in the way of disseminating rinderpest (p. 111). Cattle actually labouring under the disease were seen at this fair in association with healthy animals brought from a wide circle and destined to travel to widely separated places. We also saw cases of foot and mouth disease at the Oolooberiah fair (p. 188). The outbreak of the same disease—rinderpest—in Benares and Dinapore in 1869 was clearly traced to the same fair, Kât Berhampore in the Shahabad district (p. 345. See also evidence regarding Umritsur fair, p. 468).

Calcutta markets.

The important markets around Calcutta were made a subject of special and careful attention, and much information regarding them will be found at pages 64, 65, and 189. In any scheme of preventive action, it is obvious that cattle markets must be considered, and the importance of skilled inspection and exclusion of diseased cattle need not be urged.

Hide trade.

19. Much information regarding the trade in hides will be found scattered throughout the evidence recorded in the sequel. It is quite certain that the hides of cattle dead of rinderpest are, all over India, with the exception of Assam and the Soonderbuns, removed and carried throughout the country after being sun-dried or imperfectly cured. This is a very large industry, and any unnecessary interference with it would be a hardship and loss to hundreds; but, though no specific instance of conveyance of disease by the agency of hides has come under our notice, there is every reason to think that it may be thus conveyed (see Mr. Farrell's paper, p. 656), and preventive action, to obviate this risk, must provide for the destruction or disinfection of hides. We would recommend the adoption of the latter course. Efficient soaking in lime or salt and water, as is done in many cases, is known to render the hide innocuous, as far as conveyance of disease is concerned (see Appendix, p. 383), but at least 3 or 4 seers of lime or salt must be used for each piece, and the thing must be done thoroughly and systematically *on the spot*. If this cannot be attained, then the scoring and burial of skins, or their destruction in

any other way, is imperative. No hesitation should exist when the alternatives are a few hides and many living cattle. The subject of cattle poisoning and its relation to the hide trade have been carefully studied, and the results of investigation summed up in Appendix No. IV, to which we would refer, merely stating that the allegation that all, or most, of the murrains of Bengal are cattle poisoning has been proved groundless by the extended investigations we have made, and the fact that in Assam and the Soonderbuns, where no trade in hides exists, disease is as rife as elsewhere. Cattle poisoning

20. Having thus lightly touched upon the conditions under which cattle exist, as regulating the origin or spread of murrain,—and the analytical index we have prepared will provide a key to a more elaborate study of all the information which has been amassed on each subject,—we now proceed to set forth the principal conclusions at which we have arrived regarding—

III.—Diseases of Stock.

21. As regards the history of murrains, little need be said here. All the information gathered under this head has been given in the "historical sketches" prefixed to every division, in which all the recorded outbreaks in each district have been shortly described in chronological order. The amount of past disease of cattle everywhere, which these sketches reveal, will excite surprise, but it is small in proportion to what might have been given, had attention been continuously directed to the subject. Only in case, of the Andaman Islands, have we been able to obtain the date of the first outbreak; everywhere else there are mere glimpses of periodical prevalence stretching back towards or into the last century. We made every endeavour to trace any tradition or allusion in old Hindoo chronicles to the subject of murrain, but without success. All the information on this head which could be obtained is given at page 814 of the Appendix. The series of maps which we have prepared from the records at our disposal show a gradual increase of disease, but this, we are convinced, is more apparent than real, and is evidence of increased knowledge rather than increased disease. It is to be earnestly hoped that every outbreak which occurs will now be carefully studied and properly recorded, and that some correct idea may be furnished continuously, not only of the chronology of murrains, but of their area of distribution. This must depend entirely upon local effort, and we have had sufficient experience to convince us that local effort must be stimulated in this direction. Unless there is some department which will furnish this stimulus and record results, valuable information must be lost; and if events are not recorded as they occur, the demonstrated general prevalence of 1870 will be succeeded by an apparent absence of murrain in 1871. Thus, the teachings of the past will be of no avail with regard to precautions against the future, and no more definite truths than that murrains prevail periodically in particular places, and always somewhere, will be available for guidance. With regard to the first appearance or origin of murrains in India, we are and shall remain in complete ignorance. History of murrains. Narratives of outbreaks wanted.

22. The most important diseases of horned stock of which we have obtained experience or authentic information are:— Diseases of horned cattle.

1*st.*—Rinderpest.

2*nd.*—Foot and Mouth Disease.

3*rd.*—Hoven.

4*th.*—Quarter-ill.

5*th.*—Pleuro-pneumonia.

6*th.*—Bhooknee or Purging.

7*th.*—Cystic Disease.

8*th.*—Throat Swelling.

Reserving rinderpest for special consideration, we shall shortly state the conclusions at which we have arrived regarding the others.

23. *Foot and mouth disease* is a universal disease of cattle in India, causing a considerable amount of sickness yearly, much disabling of cattle, consi- Foot and mouth disease.

derable inconvenience, but no great mortality. It appears to be even more common and frequent than any other form of cattle disease, and if we may judge from the experience of the Andaman Islands (see Appendix, p. 595), more penetrating and persisting. It generally appears in the hot season, but may prevail at other times. Villagers everywhere in India—Bengal, Madras, Bombay, &c.—and Ceylon are familiar with it, and have eagerly attested its existence even where the severer disease was denied or concealed. Allusions to it will be found scattered through every part of the Appendix, and occur almost on every page. Cases of this disease were seen at Chooadangah (see Appendix, p. 112) and Oolooberiah (see Appendix, p. 188), and a regular epizootic studied at Darjeeling in October (see Appendix, p. 255). In this case the infectious nature of the malady and its disastrous consequences under some circumstances were very apparent. The circumstances causing exceptional severity in this instance were,—working the animals after the disease had commenced, and, apparently, a colder climate. A case exactly parallel is described by Mr. Thacker in his Madras reports (see Appendix, p. 535).

Prevalence.

Names.

The vernacular names by which this disease is known are very various, but generally derived from words signifying mouth and foot separately or in combination,—*mohpuccah*, *khurpuccah*, *muhkhur*, &c., &c. The symptoms of this malady need not be detailed here; they are well known and frequently described in Appendix No. II. The most frequent cause of death is inability to feed, owing to disease of the mouth, or severe ulceration of the feet, owing to the development of maggots. The native methods of treatment are various. The most common plan is keeping the cattle standing in muddy water; this prevents the access of flies. Various astringent barks, babool, &c., are also applied in some places. The undoubtedly infectious nature of this disease suggests the propriety of isolating the sick and segregating the healthy, destruction of litter, and disinfection; and, during the cultivating season, it is obvious that precautions must be re-doubled, in order to prevent the interference with work which this disease causes; but, considering the mild nature of the disease under a proper system of treatment, it is questionable whether greater inconvenience and loss of time and money would not be entailed by elaborate preventive measures than by any sickness which might prevail, notwithstanding cleanliness, disinfection, and simple precautions. As regards medical treatment, nothing can be better than carbolic acid and oil (1 part to 40), or camphor and oil (1 oz. to a pint), as an application to the feet and to prevent access of flies, and a watery solution of alum (10 grs. to 1 oz.) as a wash for the mouth. A mild laxative might be administered at the outset, and it is of the utmost importance to sustain the strength with soft mashes, rice gruel, &c. Keeping the affected parts clean is of great importance, and a poultice may occasionally be useful. Detached portions of the hoofs should be removed. If this plan is adopted the loss from foot and mouth disease will be very trifling. The question of the power of one attack to protect against a second was constantly held in view, but we were unable to arrive at any definite solution of it. The general testimony of the people was to the effect that one attack was not protective; in this we concur, and it is all the more remarkable in contrast with the almost unanimous belief they expressed in the protective power of one attack of rinderpest.

Treatment.

Hoven.

24. *Hoven* is an exceedingly common form of fatal disease among Indian cattle, and vivid descriptions of it met us at every turn. It is dependent upon errors of diet, and consists of suffocation from over-distention of the rumen with food or flatus. It is known by a great variety of names, and is most common in the early rains. There can be no doubt that much of the *puschima* of which we heard so much in the Presidency and Burdwan divisions is hoven, and this is brought out more clearly in the evidence of Kombar Alli (see Appendix, p. 92)—a very intelligent witness—than elsewhere. In general, it has a more expressive name; *pet bhagi* (swollen stomach) is a very common term, or some equivalent. After a smart shower of the early rains, when succulent shoots spring up as if by magic, cattle which have been nearly starved for weeks are apt to over-

feed themselves. Several animals of a herd, or among a village stock, may thus be seized with hoven, and the affection may almost appear epizootic. It is obvious that, as long as no care and system are pursued in regulating cattle feeding, they will be liable to this disease as often as a cause arises, and there can be little doubt that cases of this sort are often mistaken for murrain or poisoning. A case examined near Benares (No. 47 *post-mortem* examination) gives a good illustration of the rapidity with which death ensues. Another condition, which also proceeds from improper feeding, is impacted stomach, caused by animals in the dry weather having to subsist on withered stems or dry roots of grass. Two cases of this sort were seen at Bhubooah in Shahabad (see Appendix, p. 220), and they are no doubt very common. The treatment of cases of this description need not be entered upon here; it is matter of common veterinary practice. We are convinced that a large aggregate body of stock yearly falls victims to this preventible and curable form of disease, and its widespread existence constitutes one of the best possible arguments for the diffusion of veterinary knowledge and skill. The simple and successful operation of tapping the rumen is not even known to the people, and in many parts of the country the disease is thought to be incurable.

Fardel-bound.

Diffusion of veterinary knowledge.

25. The existence of *quarter-ill* has been more clearly proved in the Punjab than elsewhere. Mr. Dawson's valuable reports, given at pages 452—454, leave no doubt as to the state of the case at Hissar, and the testimony of the inhabitants of the Punjab in many instances showed that the disease was not confined to Hissar (see evidence of Pema Goalla, p. 455; Hansari, p. 456; Mahadoor Shamooz, p. 492; Shaik Mahomed, p. 493; Rehena and Mohadah, p. 495; villagers of Baharalla, p. 496; and Fatheh Shaha, p. 497). Mr. Farrell met with the disease in the Soonderbuns (p. 123), and from the evidence of the villagers of Dowlut Dyar (p. 98) it is evident that the term *puschima* covers cases of this kind also. This class of diseases is well known, as regards causes, pathology, and treatment, and, as they owe their origin to causes which may affect the members of a herd in common, they may assume the aspect of an epizootic; indeed, it will be observed that Mr. Dawson gives advice for the sanitary treatment of the Hissar murrain on the theory of its contagiousness, for which, in this country, there is every ground of belief. Whether this is true of this disease or class of diseases or not, it is very plain that precautionary measures are those which give the only prospect of success, and the measures recommended by Mr. Dawson, which need not be recapitulated here, are very excellent. Care in dieting, change of pasture, and intelligent watching are the measures most promising of success, and this class of diseases, which in many cases almost amount to a murrain, and do, we believe, cause much destruction of stock, supply another argument for the spread of sound views regarding the sanitary and medical treatment of stock throughout rural India.

Quarter-ill.

26. *Pleuro-pneumonia* is undoubtedly met with in some parts of India, and convincing evidence of the existence of this disease was obtained in the Punjab, where cases were seen and examined *post-mortem* (see pp. 478—480).

Pleuro-pneumonia.

The people of the Punjab were very familiar with the disease and described its symptoms accurately (see Appendix, pp. 456, 479, &c.) It is called *pheepree;* 172·9 deaths from this cause is the yearly average of the Hissar return at p. 457, or nearly 2 per cent. of stock. The disease would also appear to be common in Sind (p. 555); it is possible that it may have been originally introduced into the stud farm at Hissar, and thence disseminated throughout the Punjab and Sind. The evidence collected in the Punjab would go to show that the disease is, and has been, a common and destructive one, but not so general or destructive as rinderpest or *bhooknee* when it occurs. It appears, as a rule, in this country, to be more sporadic than epizootic. The general opinion seems to be that it is not contagious (see Appendix, p. 494); but, in the face of the evidence on this point which has accrued from Australia, South Africa, and the United Kingdom, the theory of contagiousness should be the guide to action, and segregation and disinfection should be scrupulously practised. The disease has not acquired that prominence or importance as a cause of sickness

and loss of stock which would suggest a trial of inoculation—at best an expedient of very doubtful advantage, as has been proved in Great Britain and Australia. More careful inquiry than we had time or opportunity to make is evidently highly desirable, but, as far as our inquiry has gone, we cannot conclude that pleuro-pneumonia has anywhere attained the dimensions of a murrain, or need occasion general alarm. Any investigation on this subject should be local, as circumstantial as possible, and the work of a skilled agent.

Bhooknee or purging.

27. *Bhooknee* or purging we have no hesitation in pronouncing an endemic, strictly confined to certain parts of the Punjab, *viz.*, the bar of the districts of Gujranwalla and Jhung. This disease is described at pages 448—473 by many native witnesses, and Dr. Quinnell's report at page 473 gives an excellent account of the nature, symptoms, and *post-mortem* appearances of the disease. From all the evidence recorded upon the subject, there can be little doubt that it is a disease of improper diet and watering, occurring to an exceptionally severe extent in an exceptionally dry year, and its remedy is plain—good pasture or fodder and good water. How to obtain this in years of drought, such as 1869, is no easy question, but one to be solved locally. The witnesses examined on the subject were very clear as to the difference between this disease and rinderpest (see Appendix, p. 495), and, from a comparison of the symptoms, no reasonable doubt can exist on this point. Some of the men examined thought the disease contagious; but this is a natural but erroneous inference from the circumstance of a disease affecting many cattle simultaneously, and apparently from association because in association, while they are subject to a common cause of disease. The Tehsildar of Jhung (see Appendix, p. 498) found that the disease ceased everywhere when rain fell.

Cyst disease.

28. The infection of cattle by *cysts* is a very important subject, because one form of the disease is so universal in India, and the relation of the malady to some human diseases is so well known and so serious a matter.

The hydatid cysts or the immature tænia echinococcus, which in its mature condition is harboured by dogs, and probably wolves and jackals, are found all over India affecting the liver, lungs, and spleens of cattle. The extent to which these cysts exist among cattle in Calcutta is shown by the observations made at the slaughter-houses (pp. 66 & 67), and the state of the case in Lahore is shown at page 480. Public attention has been more particularly drawn to this subject in the Punjab than elsewhere, on account of the difficulties which these cysts occasioned in the matter of meat-supply. The whole subject is elaborately discussed in two papers printed in the Appendix, one by Surgeon Major Ross, F. R. C. S., who confines his remarks to the beef tapeworm (tænia mediocanellata) (see Appendix, p. 482), and the other by Staff Assistant Surgeon J. Fleming, M. D., who discusses both kinds of tapeworm and the very common parasites called flukes (see Appendix, p. 486). Dr. Fleming enters upon the question of preventive sanitary measures, which, as far as the beef tapeworm is concerned, we entirely endorse; but the question of preventing the other variety of cysts is a much more difficult matter, and one on which we cannot offer any suggestion which would prove practicable as regards the cattle of the country at large, as the disease is probably disseminated by dogs, jackals, &c. No doubt stall-feeding and scrupulous cleanliness and care would exclude the ova of the tapeworm, but this is, as regards agricultural and village cattle, simply impossible. It does not enter into the scope of our instructions to discuss this subject elaborately, which is the less possible, as the facts on which any discussion might be founded are very far from exhaustive. We believe that it might be usefully worked out, as far as opportunities offer, by the Veterinary Department and the Officers of the British and Indian Medical Services, and we accordingly commend it to notice for investigation. Late public reports on the subject would apparently show that these cysts are not so common now as when attention was first drawn to the subject in 1866; but that this is not the case, the observations recorded at page 480 will suffice to show, and although rejections of meat by the Commissariat have, we believe, in accordance with the views of Dr. Muir, C. B., Inspector General of Hospitals, British Forces (see Appendix, p. 481), been much fewer,

there is no reason to believe that the number of carcasses in which cysts of one sort or other are found is smaller than it was. The figures quoted in public records upon this subject are founded on the records of *rejections*, and do not therefore represent the true state of the case. We are convinced that cyst disease is universal among Indian cattle, and that this is a subject worthy of extended investigation by the medical and veterinary officers scattered over India. The results of individual inquiry might be collated by the heads of these departments for the information of Government.

Throat disease.

29. *Throat disease* will be found frequently alluded to in the reports of district officers, and very few schemes of cattle disease submitted do not contain, under some name or other, an allusion to this affection. We have not been so fortunate as to see a single case of this swelling of the throat, and are inclined to believe that it is either a symptom of some other disease—rinderpest or quarter-ill—caused by swelling of the parotid and submaxillary glands or effusion of blood into the subcutaneous tissue of the neck and dewlap, or a kind of mumps—a disease which is not uncommon as an epidemic among communities in India. The disease is epizootic and fatal among cattle. A good illustration of it will be found at page 204, but descriptions and references are scattered throughout the Appendix (see pp. 102, 115, 148, 220, 440, &c.) The native treatment is firing externally, and this seems to be successful in many cases.

Other diseases of stock.

30. The foregoing are some of the most prominent diseases causing sickness and death among cattle in India. They have been briefly treated of, and the catalogue of affections to which cattle are liable is no doubt as long in India as elsewhere, though with the exception of Dr. Gilchrist's "Practical Treatise," which contains a description of many forms of cattle disease drawn from his own experience, no other systematic record of Indian origin exists. This book has hitherto been the only guide available for officers in charge of commissariat and artillery cattle, and as the directions for treatment which it contains are antiquated and inconsistent with the advanced pathology of the present day, it should not be so generally and infallibly relied upon as it apparently is.

Government cattle should be placed in medical charge of Veterinary Surgeons.

Indeed, there is every reason that Government cattle as well as horses should obtain the best veterinary advice when that is available. We understand that such is not the case now, and would urge strongly that in whatever station a Veterinary Surgeon's services are available in the Bengal Presidency, they should, as in Bombay, be employed for the treatment of sick Government cattle. A large mass of valuable experience is moreover thus available which is lost upon the unskilled men who undertake the treatment of ailing cattle, and which might be fixed for scientific purposes or utilization, as far as the cattle of the country are concerned. Any effort to apply veterinary knowledge or skill in India must in the first instance be made through the Veterinary Surgeons of the public service, and it is unfortunate that they are debarred from the only source of information and experience which is available for them, and sound advice on such subjects is now expected of them, while the special experience on which it should be founded is denied. Valuable experience is also available at the Government cattle farm at Hissar and Hoonsoor, which is not fixed or utilized. The table at page 457 shows the nature and extent of the available field of study, and it is matter of regret that this large field of observation is lost for purposes of systematic examination and record of the diseases of cattle.

IV.—Rinderpest.

Rinderpest.

31. We now come to the main and central object and subject of our labors,—the murrain to which a far greater share of mortality among cattle is due than to all other causes put together,—namely, that to which we have applied the term *rinderpest*. That this term has been appropriately applied, the evidence which we have collected and sifted leaves no reasonable doubt. After a careful study of the features of the disease in Europe, as recorded in the reports of the English Cattle Plague Commission and Veterinary Department of the Privy Council, and in systematic works; an exhaustive consideration of all

that has been written on the subject in India and Ceylon; an extended and minute inquiry, oral and documentary; a very large experience of the disease as manifested by living animals in a great many parts of the Presidency of Bengal, and an elaborate practical study of the post-mortem and microscopic appearances of the organs and tissues of subjects which have died of the disease,—we have, without any prejudice or pre-conceived opinion to misguide us, deliberately and decidedly arrived at the conclusion that this Indian murrain is identical with the Steppe plague or murrain of Europe and Russia in Asia, and is essentially the same disease as that which devastated the flocks of England in 1865-66. It is impossible to compare diseases which vary with varying circumstances of breed, country, climate, and other life conditions, so accurately as to exhibit exact identities spreading in every case into every detail; but taking a broad view of the nature and behaviour of this murrain, as displayed so copiously, and in many cases elaborately, by numerous independent witnesses in the succeeding pages, the resemblance is complete, whether we take the whole history of an outbreak, the whole *ensemble* of the phenomena of cases, or particular symptoms or pathological features.

Identity of Indian and European rinderpest.

Opinions of Medical and Veterinary authorities.

This opinion has invariably been arrived at by medical men and veterinarians who have made the disease a special study. Dr. Gilchrist in 1848 pronounced the *burra azar* of Madras to be the same as the "murrain of Europe" (p. 539). Dr. C. Palmer had, in 1864, no hesitation in calling the Calcutta epizootic *rinderpest* (Selections, Bengal Government, p. 74). Mr. Gudgin, V. S., after carefully studying the epizootic in Burmah in 1866, arrived at the same conclusion.

Mr. Thacker, V. S., from a large practical experience in Madras, extending over many years, has unreservedly adopted the same view. Mr. Barrow, V. S., who had been a Government Inspector in the County of Cambridge during the outbreak of rinderpest in England, concluded that the epizootic which he studied in Benares in 1869 was "analogous to the Steppe murrain, rinderpest, or cattle plague that ravaged the herds in various parts of England during the years 1864, 1865, and 1866" (see Appendix, p. 360). Mr. Stanley, V. S., acknowledges that this same Benares disease "somewhat resembles the rinderpest of Europe," though he doubted its identity, owing to its milder character and the absence of some characteristic phenomena. Mr. Stanley had only seen seven cases of the disease, and remarks very justly that the Steppe murrain is far less fatal in the Steppes than elsewhere (see Appendix, p. 360). Mr. Farrell, V. S., who gained a wide experience in Bengal and Assam, has no doubt or hesitation on the subject (p. 296). And, lastly, the Ceylon Cattle Disease Commission pronounce the following judgment upon the Ceylon murrain:—"It is identical in its leading features with the rinderpest of Europe *and India*, differing only to such an extent and in such a manner as might be reasonably expected under the varying circumstances in which cattle are placed in this country" (p. x of their report). We would not build too strongly on opinions, although their unanimity and the independent manner in which they have been arrived at are weighty points. The variations which may be noted between the English plague and our descriptions are no greater than we have ourselves noted in different forms of the disease in this country, and no greater than may be observed in the case of foot and mouth disease, human small-pox, and cholera. The comparison between the English and Indian disease is indeed not a fair one, because circumstances and climate are so different. A more reasonable parallel is afforded by the plague as it exists in Asiatic Russia, and, as far as the records to which we have had access inform us, the Russian disease is in Russia exactly the same in every respect as the Indian disease in India.

The only certain test of identity.

We do not propose to enter into an elaborate analysis of both diseases for the purpose of proving or fortifying our position. After the experience we have gained, and consideration we have given the subject, we have formed the opinion which we have above recorded, and we have furnished materials of every kind in this report by which its validity may be judged, and the specimens we have collected, and drawings which we have had executed, the catalogues of which are

given at p. 951, afford still further tests. If anything further is wanted, the matter may finally be set at rest by inoculation, under proper precautions, of cattle in England by material derived from the Indian plague. We do not undertake the responsibility of initiating or advising this crucial test, for we are too assured of the nature of the Indian plague to doubt its danger and impropriety; but it is incumbent on those who do not accept our conclusions, and cannot demonstrate their futility from the evidence on which they have been founded, to adopt the only means by which any doubt may be for ever removed.

Contagiousness and importability.

32. Whatever doubt may exist regarding pathological identities, there can be no doubt regarding those features of the disease on which preventive action depends, namely, contagiousness and importability; so that, for practical purposes, varieties of type are of little concern while we have to do with a febrile or exanthematous disease killing more than half the cattle it attacks, and eminently infectious. On this subject of contagiousness the evidence recorded has been almost unanimous, and this unanimity is so strong, clear, and universal, that it would almost appear superfluous to illustrate or discuss the matter. Reporters and witnesses have expressed themselves without hesitation on the subject, and in many cases have given striking instances in support. The introduction of cattle plague into the cantonment of Debrooghur on two separate occasions, in 1854 and 1869, in exactly the same manner, namely, by sepoys rejoining the head quarters of their regiment from Golaghaut, is a remarkable instance of infectiousness and importability (see Appendix, pp. 297, 311, and 315). Other very well marked illustrations will be found in the papers relating to the Assam Division.* A curious instance of importation of disease into a sound village will be found at page 184. Some of the cattle of the healthy village were impounded for trespass an affected village, and carried back the disease with them Villagers almost invariably told us whence the disease came, and, as a rule, attributed its origin to previous prevalence in an adjoining village and association of cattle on the pasture field. When the origin could not be explained, the cause was most probably want of power of accurate and intelligent observation. The progress of the disease in a village was generally traceable. The first two or three houses in which it appeared were, as a rule, contiguous; and then, as the amount of contagium was multiplied, it became general, and its spread dependent on the numerous accidents of unrestrained intercourse. In some cases, as in that of the village of Mordaha (see Appendix, p. 366), the villagers pointed to the purchase of a diseased animal, and the introduction of the murrain from the grazing tracts of the Terai and elsewhere into the villages of the adjoining districts is illustrated frequently (see Appendix, pp. 227, 253).

Opinions.

Instances.

Whether, then, the broad features of the movement of this disease across the country, or the circumstances of its progression in a village, or facts regarding the infection of particular animals or of a single shed or byre, be considered, they all point in one direction, indicating that diseased animals are the principal agency of the propagation of this disease. Negative evidence regarding the salutary effects of a cordon (p. 290), or segregation (p. 168) or removal of healthy cattle, (pp. 202, 302), points in the same direction; but in order to place the matter beyond a doubt, healthy animals bought from healthy villages were experimentally associated with those labouring under disease, with the invariable result of unfailing infection. Satisfied of the communicability of the disease from animal to animal, an attempt was made to determine up to what distance the disease was capable of conveyance. These trials will be found recorded at pages 892, 893, and the general result warrants the conclusion that, with proper precautions, a distance of 30 yards is sufficient of itself to secure

Proved experimentally.

Infecting distance.

* Much information regarding the importation of Bengalee buffaloes, and the probable importation of disease with them into Assam, will be found at p. 333; but the evidence is not so clear and conclusive as to warrant any final opinion. The following extract from a letter written by Captain L. Blathwayt, Assistant Commissioner, Golaghaut, dated 20th February 1871, is interesting, as bearing on this subject:—

"On the 26th December 1870, a herd of buffaloes brought up from Bengal passed through the Namlighur Tea Factory, and about two days after a disease broke out among the pigs belonging to the coolies, who possesssd altogether about 40, and of these every one died. It spread rapidly among the factory cattle, and up to the 28th January 137 died; but since that date there have been no deaths, and it has now entirely disappeared."

immunity; but, as the contagium is portable, it is obvious that safety at any distance must depend upon the strictness with which possible conveyance is guarded against. The infecting material is contained in all the discharges which so abundantly issue from the mucous orifices of the animal and in the scales shed from the skin; and it is more than probable that, in a dried condition, it may be capable of conveyance by a strong wind to a considerable distance. The results obtained artificially are not therefore to be adopted as safe ground of action, unless the precautions against conveyance are carefully imitated. The salutary results of careful isolation in the midst of a severe murrain exhibited in the village of Akna (p. 168) are confirmatory of these conclusions.

Conclusions.

As far as our observation has gone, we believe,—(1) that this murrain is a highly infectious one; (2) that its propagation is due mainly or entirely to that circumstance; (3) that all the incidents of particular outbreaks, if properly investigated, and with a due consideration of all possible contingencies, will be found to support this conclusion; and (4) that all preventive action must be founded on this theory. We are not prepared to affirm that the disease has not originated, and may not now originate, from conditions and causes other than infection, but we consider the evidence in favor of communicability conclusive, as far as practical effort is concerned. A strong point has been made by some reporters (p. 392) of the escape of some cattle in a village herd or flock, while others, or the majority, were attacked; but the analogy of all communicable diseases proves that liability to attack is by no means universal, and that among numbers exposed there is always an unsusceptible residue: in this disease testimony and experiment prove that animals once attacked are not, as a general rule, again attacked; and, seeing that the disease is so frequent a periodical visitant of all the districts of India, the proportional number of animals thus protected must be considerable. The conditions under which infection operates still remain to be studied. We do not pretend to be able, from the cursory glance we have been compelled to take over an immense field, to indicate all these conditions: this must be subject of future observation; but the influence of conditions, such as crowding, cleanliness, season, &c., &c., can only introduce modifications or qualifications of the general law of communicability, which is both fundamental and of primary place and importance.

Season.

One of the most potent of these conditions is, no doubt, season, and on this point the evidence indicates the rainless and hot months as being those in which this murrain most frequently occurs. It follows in this particular human small-pox and cholera, and is amenable, like them, to the repressing effect of heavy and sustained rain. As regards the predisposing effect of breed, age, sex, and condition, the general impression obtained was, that none of these conditions possessed much power in determining or deterring. What the so-called "epidemic constitution or influence" is which provides that in one year or season epidemics or epizootics shall prevail, and in another not so, we are quite unable to say, and, for purposes of action, we are of opinion that communicability and importability should occupy the place of axioms.

Names, symptoms, post-mortem appearances, and nature of disease.

33. Passing over the names by which this disease is known, which will be found in the appended glossary; the symptoms, which are abundantly illustrated throughout Appendix No. II and carefully detailed in Appendix No. VI; the post-mortem appearances, which are summarised in Appendix No. VII, where details of cases are given; the nature of the disease, which may shortly be characterised as an infectious fever of exanthematous character,—subjects which we do not consider it desirable to enlarge upon here,—we would offer a few remarks on statistics before passing on to the subject of treatment.

Statistics.

34. Numerous figured statements will be found scattered throughout Appendix No. II, and the more reliable tables have been thrown together in a special Appendix (No. III), where their legitimate conclusions, as regards the effect of the disease on stock and attacked, have been indicated (p. 615—635). Most of the tables given have been drawn up rather with a view to exhibit the

distribution of murrain, than from any belief in their statistical value. It is, however, convenient, even if exact results cannot be obtained, to express sickness and mortality in terms of figures, and for a single return informing of a complete outbreak, or a first report giving intimation of a new invasion, the form shown on page 27 (entries 3 to 8) is sufficiently convenient; but where a series of reports—weekly, monthly, &c.—have to be submitted, there is always a doubt as to how the "still ill" have been disposed of, and for this purpose a form such as that shown at page 568 is best adapted; indeed, it could not be improved on, but if different species of disease can be clearly distinguished, they should be shown on separate forms, or as separate entries in one form. It is obvious that exact results obtained in one or a few villages are more valuable for statistical purposes than unreliable data referring to a large area; but, for purposes of general information, figures, even if approximate, give a better idea of how the case stands than records.

Loss by murrain.

As regards the losses of stock incurred through this plague, while exact information is very much wanted, it is evident that the yearly loss, both absolute and relative to number of living stock all over the country, is very serious, and to be counted by hundreds of thousands. Hitherto the actual hardship and inconvenience entailed by it, as regards agricultural operations, have not been anywhere generally felt over a large area, but individuals, or even villages, have often been hampered in agriculture. This was notably the case in Diamond Harbour in 1868 (see p. 56). Cattle are still plentiful, cheap, and easily replaced, but as the demand becomes greater, the price still more enhanced, and the number of cattle relative to owners and requirements fewer, serious hindrance to agricultural operations may be apprehended.

Treatment.

35. The treatment of rinderpest may be considered under the usual heads of curative and preventive. Medical treatment commends itself to the favor of the natives of this country by its facility of application and the absence of interference with their liberty of action; and there is such an inveterate habit with them of taking things as they come, and such a decided aversion to initiating any new course of action, that, though they know the contagious character of the disease, and admit the propriety of segregation, we have found that this measure is seldom or never adopted. Attention to animals which exhibit the results of infection is the first thought in a scheme of relief, as the phenomena are patent and excite direct notice; but the conduct dependent on the inferred impalpable phenomena which precede the seizure is not so urgently aroused in the ignorant and unthinking, and is neglected. Thus it happens that the least valuable measure of relief is held in most esteem, and that while men strive to save one life, hundreds are exposed to danger and contract disease. Still, as long as repressive measures are wanting, or imperfect, or ineffective, and while there is ground for believing that a certain line of treatment gives a better chance of saving life than doing nothing, efforts to cure will hold an important place in popular estimation with the natives of this country, and cannot be laid aside.

Medical treatment.

36. The natives in most places confess their powerlessness to treat this disease, and the statement "there is no medicine for *matah*" will be found to be a frequent village confession. When they do attempt any treatment, it is often fanciful or absurd (see Appendix, pp. 116, 411). Feeding with rice gruel or other soft food is the most rational measure they adopt, but even this plan is by no means a general one, and cattle are in most cases left to recover or die with perhaps a few embers smouldering near them, or some absurdity inserted in their nostrils or ears. Fumigation with resin is practised in some places (see Appendix, p. 168), but this is rare. Worship of the goddess *Shitolah* and sacrifices at her shrine are much more approved remedial measures than drugs or applications, and in some cases the aid of the village chamar is invoked to repel some demoniacal influence.

Medical treatment has, however, been largely tried by European cattle owners and veterinary surgeons, and many plans are detailed throughout Appendix No. II (pp. 77, 299, &c.) It is unnecessary to recapitulate them here.

The plan adopted by Mr. Thacker in Madras, and which has in many cases given good results, is at once the simplest and most rational. It is described by him at page 544.

Trials.

The subject of medical treatment has undergone extensive trial at our hands, and the cases recorded in Appendix No. VI show in detail what was done, and with what result. Many of the cases were hopeless before they were admitted for treatment—moribund, or so emaciated, old, worn-out, and neglected that they soon became so. Such were nearly all the cases brought to us in Assam. The general result of our hospital trials—52·1 per cent. of recoveries and 43·5 per cent. of deaths—is not very encouraging, but taking the circumstances and condition in which our patients were received, and looking at the course of particular cases which were manifestly aided in the progress towards restoration by the means adopted, we are of opinion that the judicious exhibition of medicine and support will save a considerable proportion of animals which would otherwise succumb to the disease. Our conclusions on this subject may be summed up as follows:—

Conclusions.

No specific.

I.—No specific has been discovered for this disease, and it is difficult, looking at the nature and severity of the lesions discovered after death, to conceive the possibility of doing so. Whether any plan of treatment would avail in the very early stages, in the way of aborting or averting the sequence of future events, is very doubtful. The disease has commenced before it is manifested by symptoms easily apprehended. The early rise in temperature shown by many of our experimental cases proves this, and there is no analogical proved fact to countenance the hope. Besides, practically, few animals can be brought under treatment at an early stage, and there is no warrant for prophylactic treatment of a herd otherwise than by disinfectants, even if such a measure were possible.

Laxatives.

II.—Mild saline laxatives in the early stages are undoubtedly advantageous, but we have found severe purgation positively harmful.

Astringents.

III.—Astringents to control excessive action of the bowels are valuable in the eliminative stage of the disease.

Stimulants.

IV.—Stimulants, judiciously given, when exhaustion threatens, often turn the scale in the direction of recovery (see Appendix, p. 299, letter of Mr. J. Lyell).

Drenches.

V.—Support by liquid food is essential all through the course of the disease. Thin rice-water (*congee*) is laxative, and it should be mixed with boiled rice, so as to acquire the consistence of gruel. Pease gruel (*kalai*) is more astringent and stimulating, and has been found of great value in cases with a tendency to excessive purging.

Water.

VI.—Water should be sparingly given, and there is sufficient evidence to show that excessive draughts to quench an urgent thirst are a cause of rapid death (see Appendix, p. 299).

Saving of stock.

VII.—If these measures are adopted with judgment, perseverance, and care, we believe that at least 20 per cent. of animals which would otherwise die may be saved.

Preventive treatment.

37. The subject of preventive treatment is, for obvious reasons, a far more important one than medical treatment, and has always had a principal place in the thoughts of those, whether individuals or commissions, who have given the subject attention. On this topic the paper printed at page 799 of the Appendix treats so exhaustively, that we consider it unnecessary to do more in this place than indicate how far the experience we have gained confirms the conclusions there laid down as regards preventive effort. The same Appendix (No. VII) contains a most valuable correspondence, in which the main items in a scheme of preventive action are reviewed practically by Commissioners of Divisions and Magistrates of Districts, and the applicability of these to the

circumstances of Lower Bengal discussed. These papers may be instructively read in relation to the more systematic study of the question furnished by the paper above alluded to. A more practical comment upon the whole subject is, however, afforded by the conclusions arrived at by the Government of Madras, where a repressive law was passed in 1866, which was never brought into use, and is now declared to be neither expedient nor necessary (see Appendix, pp. 538 and 813.)

38. There are two main alternatives on which it is necessary to decide before entering on a consideration of particular measures, namely, *protection* or *repression*. A scheme of protection rests on the well-ascertained fact that one attack of the disease confers immunity from a second, and its aim is naturally or artificially to provide that cattle shall be so protected. A scheme of repression rests on the contagiousness of the disease, and its aim is to prevent healthy stock being infected by unhealthy,—to stamp out the disease. These ends are entirely opposite, and involve a completely different species of effort and arrangement. It is therefore necessary to decide on one or the other at starting; the only escape from this necessity being a do-nothing policy, or leaving things as they are to abide by the vicissitudes of events. Protection.

There can be no doubt of the protective power of one attack of rinderpest. It is the universal belief of the natives everywhere, though exceptions have been pointed out (see Appendix, pp. 299, 381, &c.) This is, however, only what obtains in other diseases of the kind, and the exceptions in this case prove the rule. A practical proof of it is shown by the enhanced value of *māntuar* bullocks in Kumaon (see Appendix, p. 433). It is also indicated by the circumstance mentioned there and elsewhere, that a delay in the recurrence of the disease is a cause of its more virulent manifestation when it does occur. This point was made a subject of experiment at Culna. Animals known to have had one attack of the disease were subjected to the most severe expedients to re-induce it without effect (Nos. 11—15, p. 883). The protectiveness of one attack may therefore be accepted as an undoubted fact. But the mortality of the disease is equally indubitable, and, even under the most careful treatment, it is doubtful if it can be reduced below 20 per cent. The question comes to be, then—Is at least 20 per cent. of the entire stock of the country to be voluntarily sacrificed in order to secure protection? Here the absence of statistics regarding the effect of the disease on the stock of the country imports hesitation and doubt into the question. It is probable that the mortality among stock from this cause alone does not exceed 5 per cent., if a sufficiently large area be taken. The statistics of particular small murrain-stricken areas during a murrain season cannot be accepted as data in considering this question; and there can be very little doubt that, as far as absolute loss of stock goes, matters are best left as they are, though, were a system of universal induction of disease initiated, the occurrence of the disease would be brought under command, and it would not interfere with the use of cattle, because agriculturists would know what to expect, and would not be embarrassed by unexpected loss of cattle during the agricultural season. This consideration is a small one, however, compared with the certain loss of stock. But the question has arisen—Can protection be conferred in any other way? Can the practice of vaccination be imitated, and a trivial non-fatal disease be induced protecting against the serious and fatal one? To this we must reply emphatically in the negative. There can be no doubt regarding the inoculability of the disease. We have verified this fact by many cases, but the disease produced by this plan was quite as severe as that caused by natural infection. A large amount of experience has been gained on this point in Russia and elsewhere, and careful and repeated efforts have been made to mitigate the severity of the disease so communicated. A careful summary of all that has been done is given in the "Report on the Cattle Plague in Great Britain during the years 1865, 1866, and 1867," issued by the Veterinary Department of the Privy Council (Appendix II, p. 326). It is evident that this plan has little to recommend it beside that of voluntarily inducing the disease by exposing animals to infection, Opinions. Experiment.

except its greater certainty and the result being better in hand. No method of mitigating the disease has hitherto been found, and our experiments (No. 44, p. 895) would go to show that transmission through sheep does not do so. The Russian Commission found that 15 transmissions through cattle did not mitigate the disease, and the result of their careful inquiries and experiments was that they could not recommend the general introduction of inoculation, but would permit its practice by private individuals under proper precautions and scientific supervision.

Conclusion.

That inoculation, if practised, must be either scrupulously isolated and circumscribed or universally adopted, is evident from the inoculated disease possessing the same power of propagation that the naturally caused disease has. In truth, inoculating is merely multiplying perils, and the mortality is confessedly never below 5 per cent. in the most favorable circumstances. Apart from the enormous establishment which would be necessary to carry out a universal system, whose cost would far exceed the losses of stock now accruing from rinderpest, it is highly probable that, on the whole, the mortality and inconvenience under a do-nothing system are much less than they would be under a system of general inoculation. A partial system of inoculation, even if the most stringent precautions against propagation of the disease are attempted, must be unhesitatingly condemned, as the necessary establishments and agency would entail greater expenditure than the present loss. Other methods of protection have been tried,—vaccination and the internal administration of disinfectants,—but neither method has been found of any use. The only protective plan of any promise is surrounding sound animals by an atmosphere of antiseptics—sulphurous or carbolic acid. Mr. Crookes' experience indicates that this plan possesses some power in securing cattle against infection, and one of our experiments (No. 41) goes to confirm the truth of this; but while advocating it as a good practice, and an easily employed adjunct to other methods, it is by itself entitled to little reliance, and should not supplant other methods more approved by reason and experience.

Repression.

39. On the whole, a policy of protecting cattle against disease has nothing in its favor in this country, and all effort must be devoted to repressing the disease and limiting the area of its prevalence and numbers attacked. This is not only the plan recommended by instinct and imperfect knowledge, but that approved by the most careful consideration of the circumstances of the case. All the methods by which a scheme of repression is put in force are passed in careful review in the paper already referred to, and while the "stamping out" of the disease should be the constant ultimate aim, its limitation, as regards area and numbers, should be attempted even if "stamping out" is not attainable. The experience which has been gained in Madras would go to show that the simple means adopted in that presidency have been invariably successful in preventing the spread of cattle epizootic disease (see Appendix, p. 513). Examples of the benefit of measures of this kind are not wanting in this presidency. Many cattle owners of Assam saved their buffaloes by sending them beyond the sphere of prevalence of the murrain (see Appendix, pp. 318, 322, and 331). The precautions adopted against the spread of disease in the Andaman Islands (see Appendix, p. 595) clearly saved the stock of the Settlement. The measures adopted on a large scale at Nalla in the Sonthal Pergunnahs (see Appendix, p. 232) evidently quenched the disease. Illustrations might be multiplied and instances adduced of the natives spontaneously adopting measures to isolate and segregate, but the one truth which has everywhere met us is, that precautions of this sort are absolutely neglected, or so imperfectly carried out as to be futile. Murrains are spread through the circumstances of daily life and occupation, and these must be altered or hindered in order to carry out a plan of isolation. Thus, measures intended for a good purpose become a present sacrifice and evil, and it is not strange that a people so short-sighted and little prone to study the future as the natives of India should overestimate the palpable evils and under-estimate the possible advantages of restrictions. Little can be expected from the people in the way of aid, but

much in the way of passive obstruction and neglect of the simplest precautionary rules. This has necessitated a recourse to law and the police, and persons in authority have had to take forethought for those whose interests are most concerned, and compel them to action in accordance therewith.

Necessity of legislation.

40. The question—Is recourse to law necessary ?—has been amply discussed in the papers placed together in Appendix V. The general impression is that without special legislation nothing effective can be done ; and this coincides with the experience of Europe, where this belief is emphatically declared by every country in an elaborate and minute code of laws or rules. It is true that though an Act was passed in Madras in 1866, recourse to law was considered, in 1870, neither expedient nor necessary ; still the law is there, and though in this country, from the paternal character of the Government and the personal influence which district officers possess, written law is not so necessary as in Europe, the law has a moral force, and sets forth moreover the principles and methods which are to guide action. We are of opinion that a law of a permissive kind, applicable, as circumstances arise, to particular towns, districts, or divisions, by a notification in the Provincial Gazette, and setting forth what in certain circumstances ought to be done, and may legally be done, should be enacted. It would secure uniformity of action, and would, moreover, arm the Magistrate with a power which, whether actually applied in full force or not, would invest his instructions and efforts with greater influence and effect.

Form of legislation.

41. Taking for granted the need of legal provision, the next question is— What form shall it assume ? On this subject the Appendix in question contains much information. The particular points on which we would place the greatest emphasis are,—

Early notice.

I.—The duty of giving early notice. Unless immediate notice of an outbreak is given, all future action is rendered less efficient. This matter involves the question of what agency is to be responsible for initiating action, whether the owner, the village headman, a special agency—pound-keeper, &c.,— or the ordinary police. There is a universal feeling that the existing and convenient agency of the police should not be utilized. The village headman and punchayut or his council have been recognized as a sort of village municipality, and if any degree of self-government is possible, this would seem to be the proper village authority in a social matter of this kind ; but action embraces an area wider than the village, and the question arises whether the zemindar or his analogue or representative should be the Magistrate's intermediate agent in this matter, or the inspector or sub-inspector of police ; or whether a special agency consisting of special district veterinary inspectors and a staff of salootries or pound-keepers shall be entertained, competent to arrange sanitary measures and treat cattle laboring under disease. Whatever may be the ultimate scheme of agency, it is probable that at first existing agency must be utilized, and it would appear to be more reasonable to place on zemindars, their agents and representatives—those paying Government for the rent of their land—the onus of carrying out means to save their own and their neighbour's cattle from disease. Such a scheme would involve an immediate notice of outbreak by owners to the village headman or zemindar's representative in the village or town. In places with municipalities, the municipality and its agents would be the responsible agency.

Agency.

Segregation.

II.—The duty of prompt segregation would naturally attach in the first place to owners, who should be compelled to isolate their own sick and segregate their healthy. How this is to be done is a problem not easy to solve. The reason universally alleged for failing to segregate was want of suitable arrangements, and in the more densely peopled and largely cultivated districts the question is not an easy one. The stock of an owner might be isolated for the time in his house, but this in seasons of cultivation would impose on him hardship and loss, and without possessing a separate special cow-house he could not segregate ; besides, his compound would be too small to provide sufficient distance, his healthy stock would be exposed to the contamination which had already taken place in his byre, and, moreover, he would have still to tend them all, and would

convey infection from the sick to the healthy. Special village arrangements are therefore clearly indicated—a plot of ground, held in common, available for strict and absolute segregation of sick under a special cowherd, where a temporary shed might be erected, and to carry out with any effect a system of sanitary treatment, the cow-house would have to be abandoned and thoroughly disinfected, and the healthy stock, containing perhaps infected animals, placed in isolation elsewhere. This would involve some permanent well known rule, common interest, a certain amount of common action and sacrifice, an agency responsible for its adoption, and a common penalty for neglect. The village would have to be isolated and proclaimed, all intermixture of cattle with those of other places interdicted, and the precautions initiated maintained until some weeks after the last case. The power of modifying this rule during the agricultural season, in strict consistency with rigid segregation, would rest with the local authority. The difficulty of the problem increases as the affected area is wider, and when a large area is infected, general stoppages of movements, regulation of fairs, &c., would have to be ordered by the Magistrate on a large scale, and in such a case the services of the general police must be brought into requisition. It is thus imperative that, for economy of effort, and with a view to minimise irksome restrictions, the earliest notice of outbreaks, and the adoption of proper measures when the disease presents the smallest proportions, should be one of the principal objects. To ensure this, the people must be practically taught segregation, and the plan most approved by experience installed as a village habit.

Early action.

Removal of healthy.

III.—When circumstances admit of it, there can be no doubt of the superiority of the plan of removing the healthy and isolating the sick, rather than simply removing the sick for isolation. The Madras system of kraaling is undoubtedly the best possible in the country (see Appendix, p. 544), but it demands space. In some districts and parts of districts it is possible, but in others not so, and the possibility of it should be made matter of distinct investigation and provision in every district and locality.

Treatment of sick.

IV.—The treatment of the isolated sick should be carefully carried out, and either the people instructed in simple methods of doing so, or special agents made available for the purpose.

Burial of carcasses.

V.—All things considered, the burial of carcasses is the best method of their disposal, and this might be done by the chamars, who might in consideration be permitted to take the hide, provided they soaked it thoroughly, and at once, in lime water, or salt and water, under supervision, and *on the spot*; otherwise it should be scored and buried with the carcass. The exhumation of the carcasses by dogs and jackals or wolves, or by chamars, might be provided against by sufficiently deep burial in the one case, and scoring the hide in the other; the responsibility of this measure would rest with the village headman, aided by the chowkeedar.

Disinfection

VI.—Disinfection, in the full sense of the term, would have to be carefully carried out all through. The methods of disinfecting are carefully put down at page 810, but fire is obviously the most effective and suitable.

Killing.

VII.—The more serious, though efficient, expedient of killing is so antagonistic to the feelings of the people of India that we do not recommend its adoption in any case, even if the circumstances of the disease, as it prevails in this country—so common, so frequent, and so scattered—did not preclude its adoption.

Proposed scheme.

42. Though we feel that the subject is hedged round with practical difficulties, we deem it our duty to submit a particular plan, and we accordingly recommend that one or more skilled agents be attached to each Collectorate for employment for the suppression of cattle plague; that a rinderpest quarantine plot be definitely assigned to every village or a group of villages, where the sick may be promptly segregated. It might be used for pasture during plague-free times, but on the appearance of plague should be fenced in and employed as a hospital, and kept fenced in and vacant for some time after cessation of plague. Such temporary hospitals, constructed of bamboo and

grass, might be put up by the villagers at short notice, and would be burnt when no longer required. It would be the duty of the owner, under penalty, to report to the village headman the outbreak of disease; his duty, with the chowkeedar's aid, to insist on isolation and the construction of the temporary hospital, and to adopt preliminary measures as above sketched. If the disease spread beyond one or two cases, it would be his duty to report to the zemindar or his agent, who would immediately see that the required measures have been adopted, and would report to the Magistrate, who would despatch his veterinary inspector or other agent to direct the carrying out of effective measures and treat the sick. The general ideas of segregation and destruction of contagium must govern every particular measure devised. Simpler plans would have to be adopted at first, and when their advantage became evident and the system familiar, there would be less difficulty in insisting on more stringent measures. We would advocate the legalising of the most extensive, severe, and stringent measures for adoption when the necessity arises, but as the kind and extent of measures used must depend on the circumstances and needs of the case, we would bar the adoption of any but the most simple measures of a preliminary kind until, on full cause and occasion being shown, the local Government authorized publicly their adoption.

Veterinary education.

43. There is one subject, however, which we would press upon the early attention of Government, namely, veterinary education. Our pages show what a lamentable yearly loss of stock there is throughout India; how much of that is owing to neglect and ignorance; how crude and erroneous are the notions generally entertained regarding the hygienic treatment of stock, their diseases, and their treatment, hygienic and medical; and there is a real and pressing demand for the diffusion of sound knowledge on all these points.

Circulars and simple manuals translated into the vernacular are very good as far as they go, but it is doubtful whether they command much attention practically, or penetrate, to any material extent, beneath the crust of apathy which surrounds the average cattle owner. What is wanted is a skilled agency, and this can only be attained by means of systematic instruction imparted in an organized school where precept is illustrated and impressed by practice. It is not too much to anticipate that the wealthier among a people, whose lives depend on their cattle, and who entertain such extravagant ideas regarding their care, nay, their sanctity, will rejoice to have an opportunity of coming forward and associating their names with so congenial and pious a scheme by endowing an institution of this kind.

Properly organized, it would be available for the instruction as well of all persons who may have the care of public stock—horses and cattle; of a native agency by which epizootic and other diseases might be properly investigated and treated, and of a class who might devote themselves to the private practice of the veterinary art.

Relation of rinderpest to human diseases.

44. The relation of rinderpest to human disease was a subject of constant inquiry, but we were unable to recognise any specific relation between either diseases or epidemics. No single fact favoring the idea of its being either received or imparted by way of infection came under our notice. A considerable body of evidence exists bearing on the effect on man of inoculation from this distemper (see Appendix, pp. 137, 239), and, as far as this evidence goes, it appears that the result is the development of a varioloid disease. Rinderpest and small-pox have prevailed simultaneously (see Appendix, pp. 37, 42, 197, 597) among cattle and men, but these diseases have more frequently occurred dissociated than associated. Cholera has been observed to precede and succeed (see Appendix, pp. 276, 591) rinderpest; but the same remark applies, and rinderpest occurs as frequently without as with cholera, existing either before or during, or after it. The truth seems to be that these three maladies are hot weather diseases; that they do occur simultaneously, but not invariably, necessarily, or even very frequently; and that the causes that determine the prevalence or excessive prevalence of one are likely to determine an excess of one or both of the others.

Affection of other animals than cattle.

45. Another point to which our attention was always directed was the susceptibility of other animals to rinderpest. On this point the evidence is ample, but very contradictory, and its solution not only interesting, as bearing on the scientific question of what different species of animals are liable to attack by one specific disease, but important with regard to the conveyance and multiplication of contagium and measures of prevention. That bullocks, buffaloes, yaks, jooboos, goats, sheep, and deer are liable to infection is beyond doubt. The evidence is strong as regards pigs, but we failed to induce the disease in them by inoculation; as regards dogs, jackals, wolves, cats, tigers, and horses, the allegations made are subject to very considerable doubt. There can be no doubt that fowls are liable to an eruptive febrile affection, and in the case of the village of Akna we found this co-existing with rinderpest, but we failed to induce any disease by inoculation. Carrion animals are, however, an undoubted means of spreading the disease, and it is probable that even flies may convey the contagium from one subject to another; the practical rule of preventing access of all living creatures to the diseased or dead is therefore well founded, and the considerations now adduced furnish another strong reason for the burial of carcasses.

Carrion animals.

Cattle poisoning.

46. The subject of cattle poisoning has been methodically and amply treated of in Appendix IV, and its discussion here becomes unnecessary.

Resumé.

47. It will be convenient, before closing this general sketch of the results of our inquiry, to recapitulate the principal recommendations which we have been induced to make. They are as follows:—

I.—Whenever murrain breaks out, it should be made a subject of special local inquiry by committees or skilled agents.

II.—In order to test the effect of epizootics upon stock, an accurate census before and after the outbreak is absolutely necessary; or, if this is not attainable, an approximate census of the cattle of districts should be made to serve as a basis upon which the extent of loss from any outbreak may be estimated.

III.—As a means of exhibiting the fluctuations of value of stock, market prices of different kinds of stock should be periodically published in local Gazettes.

IV.—The systematic storing of fodder and jealous preservation of pasture land, where it exists, and its provision where it does not exist, are important considerations as regards the welfare of stock generally.

V.—Herding and droving cattle should be watched and regulated, especially in times of murrain.

VI.—Large fairs should be subject to skilled inspection and sanitary precaution, and smaller fairs carefully watched, especially in murrain times.

VII.—The hide trade is a source of danger, and should be watched and regulated. In times of murrain, hides should be destroyed or thoroughly disinfected.

VIII.—A law should be enacted for India regulating and restricting the sale of poisons.

IX.—Slaughter-houses should be under skilled supervision.

X.—Government cattle should, if possible, be placed under the veterinary charge of skilled men.

XI.—A law should be enacted embodying rules for the repression, and prevention of spread, of murrain, and capable of ready application to any locality when the necessity arises.

XII.—A veterinary school for the training of a native skilled agency should be organized.

XIII.—Such skilled agents should be attached to municipalities and collectorates to investigate and report on murrains, and apply preventive and remedial measures.

XIV.—A yearly summary of all the information which has been collected during the year regarding cattle murrains should be prepared and published, and the subject should constitute a point of attention in administration reports of provinces.

XV.—The collection of such information and preparation of such reports should be assigned as a duty to some particular individual, office or department.

48. It only remains for us now to express our sense of the unfailing courtesy and ready help which we always experienced at the hands of district officials in the prosecution of our inquiries, and of regret that, from circumstances beyond our power, we have not been able to present this report sooner. Acknowledgments.

J. H. B. HALLEN.

K. McLEOD, *Secretary.*

KENNETH McLEOD.

J. G. CHARLES.

HEM CHUNDER KERR.

Calcutta, June 30, 1871.

MIRZA MAHOMED ALI JAN.

With regard to the identity of the Indian murrain and European rinderpest, I wish to record that I obtained experience of the latter in London and Edinburgh as affecting both cattle and sheep; that I entered on this investigation without having formed any opinion regarding the nature of the former; and that, from a comparison of my experience here and in England, I am firmly convinced that the two diseases are essentially the same.

J. H. B. HALLEN.

From J. G. CHARLES, Esq., C. S., *Officiating Joint Magistrate, Patna, to the President, Cattle Plague Commission*—(*No.* 838, *dated, Patna,* 22*nd June* 1871). J. G. Charles, Esq.

I have the honor to acknowledge the receipt of your letter No. 81, dated, Calcutta, 3rd June 1871, and subsequent telegram, and regret that a press of work has prevented my replying to your communication sooner.

2. The report which accompanies your letter appears to embody the principal conclusions at which the Commission arrived in committee before the civil members were withdrawn, and I have therefore no objection to my signature being attached to it, though I should have been glad if more time and leisure from my other duties could have been allowed me for its perusal previously.

3. With special reference to clause XI, section 47 of the report, I desire to place on record my conviction that any legislation having for its object the repression and prevention of cattle murrain should be introduced with great caution, and I believe it to be doubtful whether much good would result from a very strict law on the subject until the people have been trained to see the necessity for it.*

* See para. 42, page xxvii.—C. P. C.

The civil authorities with whom, as a member of the Commission, I had occasion to converse, as well as many native gentlemen, declared themselves opposed to all complicated legislation with reference to cattle murrains, partly on the ground that it would be resented by the people, and partly because, from want of adequate supervision, it would become inoperative

J. G. Charles, Esq.

in the present condition of the country. The suggestions contained in the report with regard to legislative action being purposely general, it seems unnecessary for me further to record my own views on the subject, but I am prepared to do so, should the Government afterwards require it.

4. I may remark in conclusion that I believe it to be a matter of primary importance that information in a concise form regarding the prevalent diseases of cattle, as well as the treatment recommended, and the action necessary to prevent the spread of infectious disease, should be supplied both in English and the vernacular to the various civil authorities throughout the country, and the spread of such information would do much to render the people generally alive to the importance of segregation and dieting when outbreaks of infectious disease occur among their cattle.*

* This has been already done in Madras (p. 543) and Lower Bengal (p. 810).—C. P. C.

APPENDIX No. I.

JOURNAL OF PROCEEDINGS OF THE INDIAN CATTLE PLAGUE COMMISSION.

JOURNAL OF PROCEEDINGS

OF THE

INDIAN CATTLE PLAGUE COMMISSION.

The Commission met at their Office, No. 1, Sudder Street, Calcutta, on the 21st December 1869, at 12 noon. Calcutta.

All the Members have now joined, namely,—

J. H. B. HALLEN, Esq., Staff V. S., L. R. C. S., F. R. S., (Edin.). — *President.*
A. C. MANGLES, Esq., Bengal Civil Service.
K. McLEOD, Esq., A. M., M. D., Assistant Surgeon, B. M. S. — *Members.*
BABOO HEM CHUNDER KERR, Deputy Magistrate and Deputy Collector.

2. Letter No. 5182, dated 27th November 1869, from the Secretary to the Government of India, Home Department, containing general instructions as to the conduct of the investigation, having been carefully studied, Form No. 1 has been drawn up and circulated to all Commissioners for distribution among Collectors, with a view to obtain information for the guidance of the future proceedings of the Commission. Two other forms were framed and printed, in order to facilitate the registration of symptoms and *post-mortem* appearances.

3. Information having been obtained from the Commissioner of Assam of the prevalence of murrain in the Seebsaugor District, application has been made to Government for means of conveyance, in order to visit Assam and investigate the disease reported on.

4. Indents have been submitted for stationery, maps, medicines, instruments and tents, which are in course of being supplied.

5. Until means of conveyance to Assam have been furnished, or reports as to the prevalence of disease in a more accessible locality obtained, the Commission propose to occupy themselves in making inquiries in and about Calcutta on the following subjects, namely,—

1.—Supply and quality of meat.

2.—State of slaughter-houses.

3.—Inspection of slaughter-houses.

4.—Inspection of diaries as to condition and health of cows, byres; also quality of milk and number of cows kept in Calcutta for diary purposes.

5.—Calcutta diaries; how supplied with cows.

6.—Annual exports of hides from 1849 to 1869.

7.—Trade in hides in Calcutta; whence and how leather merchants are supplied.

6. A series of memoranda have been drawn up for the guidance of persons volunteering information on subjects relating to cattle. Form (No. 4.)

7. Dr. McLeod has consented to act as Secretary, and Baboo Hem Chunder [illegible] as Treasurer and in charge of the office.

22*nd December*.—The Commission proceeded to examine the Tengra Slaughter-house.

Calcutta. At a meeting at 11 A. M., Mr. Robert Sheriff, late Manager of the Port Canning Company's Zemindaree, was examined, and gave evidence which is recorded.

23*rd December*.—Further information having been received of the prevalence of murrain of a severe type in that province, the Commission intend proceeding to Assam by India General Steam Navigation Company's steamer *Colgong*, from Khoostea to Seebsaugor and other districts. The steamer is to leave Khoostea on Sunday next, the 26th. Tents are to be furnished by the Home Department at once. The Commissioner of Assam has been written to, apprising him of the Commission's intended visit.

24*th*.—Tents were inspected at 10 A. M., and at once despatched to India General Steam Navigation Company's Office, and preparations made for departure to Assam.

25*th*.—The Commission met at 11 A. M. to arrange for leaving for Khoostea this evening.

26*th*.—Sunday.

Khoostea. 27*th*.—The starting of the steamer having been postponed till the 28th, the members proceeded by rail to Khoostea this morning.

28*th*.—The starting of the steamer has been again postponed till to-morrow.

29*th*.—The steamer started at 4 P. M.

30*th*.—An accident occurred to the engine at 9 A. M., and no further progress was made this day.

31*st*—Engine repaired; the steamer proceeded.

Serajgunge. 1*st Jany*. 1870.—Touched at Serajgunge; no opportunity of making any enquiries.

Kallygunge. 3*rd*.—Touched at Kallygunge. Ascertained from Mr. Campbell from North Luckimpore, Assam, that cattle disease had raged in that locality, but had now subsided. A copy of form No. 4 was handed to this gentleman to fill up.

No disease prevailing at Kallygunge.

Doobree. 5*th*.—Touched at Doobree. Requested the attendance of the Extra Assistant Commissioner, but he arrived just as the steamer started.

Gowalpara. 7*th*.—Touched at Gowalpara. No opportunity of obtaining information. Received letter from Commissioner of Assam.

Assam. 9*th*.—Arrived at Gowhatty at 6 P. M.

Gowhatty. 10*th*.—Had an interview with Colonel Agnew, Commissioner of Assam, also
D. Kamroop. saw Colonel Bivar, Judicial Commissioner, Mr. Mitchell, Deputy Commissioner of Nowgong, and Mr. Boyd, Assistant Commissioner at Gowhatty; were advised by the Commissioner to proceed to Debrooghur in the first instance, and thence march to Seebsaugor. Copies of form No. 4 (20) were left with the Commissioner for distribution among district officials, &c. The Commissioner of Assam proceeds with the steamer to Tezpore.

Mungledye. 11*th*.—Touched at Mungledye. Messrs. Bruce and Campbell, Tea Planters,
D. Durrung. came on board *en route* for Tezpore. Disease having occurred in their district, they will probably be able to afford the Commission information.

12*th*.—Messrs. Bruce and Campbell were examined, and their depositions recorded. Mr. Bruce was Extra Assistant Commissioner of Mungledye when the disease prevailed there.

Tezpore. 13*th*.—Touched at Tezpore. Form No. 4 was placed in the hands of Major Lamb, the Deputy Commissioner, who promised to give the Commission all the information in his power. The Commissioner left the steamer and returned to Gowhatty. He handed two letters, one to the Deputy Commissioner of Debrooghur, and the other to the Officer Commanding the Station, requesting these officers to afford all possible aid, especially in providing more elephants; the Commissioner having been able to place only eight at their disposal. Colonel Agnew suggests that the Commission should proceed from Debrooghur to Seebsaugor, at both of which places, doubtless, all information as to the

nature, &c., of the prevailing disease will be obtained, and afterwards proceed to Jorehaut, and there remain until the Government steamer belonging to the Assam Commission arrives at Kuklamookh. Colonel Agnew thinks that the steamer will probably arrive there about the 25th instant, but he will further communicate through the Assistant Commissioner, Mr. Carnegy, at Jorehaut. Colonel Agnew will perhaps come with the steamer, but, if not able to do so, will instruct the Captain of the vessel to place himself under the direction of the Commission. The latter will be able to return to Khoostea by this steamer. Tezpore.

The Commission have requested Colonel Agnew to be good enough to direct Mr. Farrell, Veterinary Surgeon, to place himself in communication with the Commission, and report on the murrain, as found by him, and the name of the localities where the disease prevails in Seebsaugor.

Colonel Agnew will write directly the steamer arrives in Gowhatty, and name the probable date of its arrival at Kuklamookh. 5 P. M., touched at Koliabar: no information obtained; inspected two Bengal buffaloes and several Bengali bullocks free of disease and in good condition—the property of tea planters. Koliabar.

15*th Jany.*—Touched at Dhunserimookh: no information. Dhunserimookh.

17*th.*—Touched at Kuklamookh. Were informed by Mr. Cogden, the Steamboat Agent, that disease had prevailed at Jorehaut (9 miles off), but that no case had occurred for about a month. Reached Dekoomookh at 7 P. M. Got a packet of letters from Seebsaugor. Kuklamookh. Dekoomookh.

18*th.*—Left Dekoomookh at 12 noon and proceeded. The letters received last night were carefully read and considered by the Commission. Information was received of the existence of cattle disease in Baraitch.

19*th.*—Touched at Dehingmookh at 2 P. M. Arrived at Debroomookh (6 miles from Debrooghur) at 9 P. M. Dehingmookh.

20*th.*—At 4 P. M. arrived at Debrooghur, and took up quarters, in the Circuit Bungalow. A letter was received from Captain Gregory, stating that he had proceeded to Madarghat in the vicinity of which cattle plague was reported to prevail, and the Assistant Commissioner Mr. Maitland informed the Commission that Captain Gregory would return to Debrooghur next day. Debrooghur. D. Luckimpore.

21*st.*—The Commission, finding that Mr. Farrell, Veterinary Surgeon, had been deputed by the Bengal Government to inquire into the nature of the murrain prevailing in Assam, and is at present in Debrooghur, requested that gentleman to give evidence, which was partially taken to-day from 11 A. M. to 5 P. M.

22*nd.*—Mr. Farrell's examination continued till 2 P. M. Captain Gregory, Deputy Commissioner, has returned from Madarghat, and reports that murrain still prevails there. He has made arrangements for sick cattle from the surrounding villages being sent there for the inspection of the Commission. The Commission will proceed to Madarghat as soon as arrangements can be made for the conveyance of tents and baggage. Dr. White, of the 42nd A. L. Infantry, kindly attended to give evidence, but his examination has been postponed till the return of the Commission from Madarghat.

23*rd.*—Sunday.

24*th.*—The Commission proceeded to Madarghat, accompanied by Captain Gregory, Deputy Commissioner. A *post-mortem* examination of a bullock which had died the previous night was made, and the appearances minutely recorded. Madarghat.

25*th.*—Captain Gregory, Deputy Commissioner, having to proceed to Jeypore, has placed a Sub-Inspector of Police, four Constables, and 20 municipal coolies at the disposal of the Commission, and has also directed that 6 mouzahdars of the surrounding district should attend in turn, one every morning, at the camp of the Commission, for the purpose of reporting if murrain prevails in their mouzahs; also to enquire if they can afford the Commission any assistance.

At 9-30 A. M., two cases of reported murrain were examined, which had been under the care of the Deputy Commissioner, and found to be affected with *gootee* (rinderpest), but in process of recovery.

Mudarghat. At 10-30 A. M., a *post-mortem* of a cow, which had died of the plague two days ago, was performed with great care. The case was found to be similar to the one yesterday examined, namely, a case of rinderpest.

Rode out in the afternoon to see a cow which was being brought to camp and was reported unable to proceed; found it dying of rinderpest, and directed it to be conveyed into camp.

26*th Jany.*—In the morning the duties of the coolies placed at the disposal of the Commission by Captain Gregory were carefully allotted. These men are employed in caring for sick cattle, conveying carcases, digging graves, &c., and one man is sent into Debrooghur for post.

In the forenoon performed a *post-mortem* examination with great care. Dr. White and Mr. Farrell, Veterinary Surgeon, witnessed the performance, and recognized the appearances as the same which they had frequently seen in *post-mortem* examinations of cattle dying from plague.

In the afternoon rode out to see some cattle ill of plague in a village called Cooargaw about two miles distant.

A moribund calf was brought in.

27*th.*—In the morning carefully examined the sick cattle. Inoculated four sound cattle, one with blood, another with milk, a third with fæces, and a fourth with aphtha from the cow dissected yesterday. Several sick cattle were brought in by villagers. There are now fifteen animals in hospital.

In the forenoon performed three *post-mortem* examinations.

In the afternoon carefully examined all the cases, especially those inoculated in the morning (symptoms recorded).

Baboo Hem Chunder Kerr rode out to visit the Singhjan Garden where several convalescent animals were inspected. He heard that pigs were dying of the disease in that locality.

28*th.*—At 8 A. M. all the cases in hospital were examined, and notes of their condition, pulse, temperature, &c., carefully recorded; two cases died during the previous night.

At 11 A. M. four carcases were examined *post-mortem*, namely, the two cases which died, one which was brought in moribund last night, and another which was brought in dead by some villagers. These examinations occupied the Commission till 2-30 P. M.

The evidence of a neighbouring mouzahdar was recorded at 3 P. M.

From 5 to 6-30 P. M. all the cases in hospital were examined. Five new cases were brought by villagers, who seem desirous to assist the inquiry.

29*th.*—At 8 A. M. examined all the sick cattle, three had died during the night, one died this morning.

At 10-30 A. M. performed five *post-mortem* examinations which occupied 1½ hours.

At 4 P. M. took the evidence of a neighbouring mouzahdar. Baboo Hem Chunder Kerr rode out to the Lahwul Garden to make inquiries.

At 5 P. M. examined sick cattle.

30*th.*—Mr. Mangles, who had proceeded on the 25th in company with Captain Gregory towards Jeypore (35 miles south of Debrooghur), in order to make inquiries as to the prevalence of cattle plague in the interior, returned, and reported that disease did not exist towards Jeypore, and Captain Gregory did not hear of any. Sick cattle were examined at 1 P. M.

31*st.*—At 8 A. M. hospital visited.

At 10-30 A. M. two *post-mortems* performed.

At 12-30 up to 5-30 P. M., the Commission was occupied in recording the evidence of mouzahdars and ryots in this neighbourhood. Hospital visited at 6 P. M.

A village, Millingia, was visited by the Commission and the byres inspected. Inquiries were also made of the inhabitants as to the prevalence of disease and condition of cattle. Madarghat.

1*st February.*—At 9 A. M. visited hospital and examined the sick cattle.

At 11 A. M. the native witnesses selected by Captain Gregory were examined, and their evidence recorded.

At 4 P. M. the sick were again examined.

At 4-30 P. M. several villages were visited, and the inhabitants questioned as to the prevalence of disease. One village was found to have suffered severely, one to be suffering, and one to have escaped the disease. Nothing was found in the character or condition of these villages to account for this circumstance. The cattle sheds were clean and well kept. Microscopic observations are being made daily.

2*nd.*—At 8 A. M. hospital was visited and the sick cattle examined.

During the forenoon the evidence of Hood Gosain was taken and recorded.

In the afternoon two villages were visited, and their inhabitants questioned as to the prevalence of disease, loss of cattle, &c., &c.

3*rd.*—At 9 A. M. visited hospital. The four inoculated cattle now show every symptom of disease. The case of the buffalo is not so well marked.

Forenoon.—The evidence of Mohun Gosain, a respectable native, was taken and recorded.

Evening.—Visited villages Katani and Dahenia, where cattle plague has been severe.

4*th.*—At 9 A. M. visited hospital. The buffalo now shows the disease more markedly. At 10-30, a *post-mortem* examination was performed of two of the inoculated cattle which had died, one during the night and one at 10 A. M. These animals exhibited every sign of rinderpest.

In the afternoon visited some villages bordering on the Pittar (ricefield) to the south, and questioned the inhabitants as in the previous cases.

5*th.*—At 9 A. M. visited hospital, no deaths. Heavy rain prevented the usual visit to villages; 5 P. M. visited hospital.

6*th.*—At 9 A. M. and 4-30 P. M. visited hospital. During the afternoon visited three or four villages.

7*th.*—At 9 A. M. examined the sick cattle. All are now exhibiting the disease in a very severe form.

During the afternoon, a *post-mortem* examination was performed of a bullock (No. 14 hospital case), which died during the forenoon.

Visited hospital at 5 P. M.

Made inquiries about the murrain at two houses in the centre of the Pittar at the road side. One of the shop-keepers there had a cow and calf which have not as yet suffered from the disease.

8*th.*—Buffalo died during night.

The two remaining bullocks are extremely ill.

During the afternoon the buffalo was examined and found to exhibit the signs of rinderpest in a most severe form.

Mr. Mangles and Baboo Hem Chunder Kerr proceeded to Debrooghur with the intention of taking the evidence of Captain Gregory to-morrow.

The sheds were pulled down and burnt. One of the bullocks died this evening; the last will probably die during the night. *Post-mortem* examinations will be performed to-morrow morning, and the Commission will return to Debrooghur to-morrow afternoon, and make arrangements for leaving Debroomookh on Saturday, the 12th, for Calcutta.

9*th.*—At 7 A. M. performed two *post-mortem* examinations of the last bullocks.

Debrooghur. Camp was struck about 10 A. M., and all the tents, &c., sent in to Debrooghur.

The fence surrounding the hospital was not removed, and the mouzahdar of the village cautioned not to allow any cattle to graze within the enclosure for at least a month.

The other Members of the Commission returned to Debrooghur.

The evidence of Captain Gregory was taken in the afternoon.

10*th February*—The evidence of Mr. Comber, Tea Planter, Reverend Mr. Higgs, and Dr. White was taken and recorded in course of the day.

11*th*.—During the forenoon the evidence of Mr. Hannay and Baboo Mohim Chunder Borooah was taken and recorded.

During the afternoon the Commission proceeded on board the steamer *Koel* which had been placed at their disposal by the Commissioner of Assam.

12*th*.—Left Debroomookh at 10 A. M., proceeded to Kuklamookh.

13*th*.—Sunday.

14*th*.—Reached Tezpore at 11 A. M.

Commenced reading and arranging the information obtained relative to cattle disease in Assam.

Gowhatty. 15*th*.—Reached Gowhatty at 10 A. M.

Had an interview with Colonel Agnew.

The evidence of Dr. Purves, Civil Surgeon, Mr. Beecher, Colonel Campbell, Moonshie Syud Sukawat Hossein, and Baboo Gunganauth Moonsiff was taken and recorded by the Members of the Commission during the afternoon.

16*th to* 19*th*.—Left Gowhatty at 9 A. M. of the 16th and proceeded to Khoostea. Office work was carried on regularly during these days.

Calcutta. 20*th*.—Arrived at Khoostea and proceeded to Calcutta.

21*st* & 22*nd*.—Office not arrived.

23*rd*.—Met at 12 noon, at No. 1, Sudder Street; went through correspondence which was found awaiting arrival. The President had an interview with His Excellency the Viceroy.

24*th*.—Met at 11 A. M., continued analysing and arranging evidence, wrote to Home Office reporting proceedings in and return from Assam.

25*th*.—Met at 11 A. M.; similarly employed: prepared indent for medicines and stationery; obtained maps from Surveyor General's Office. Information having been obtained from the district of Nuddea of the prevalence of *gootee*, a letter was written to the Magistrate, asking for further information and inquiring how the Commission may best proceed to investigate the disease. A letter was also written to the Deputy Commissioner of Fyzabad in Oude, with a similar object.

26*th*.—Met at 11 A. M., read correspondence, and analysed evidence.

27*th*.—Sunday.

28*th*.—Met at 11 A. M.; wrote to Mr. Cotton, Assistant Magistrate, Chooadangah, informing him of the intention of the Commission to proceed thither on the morning of Thursday, the 3rd proximo. Also wrote on the same subject to the Commissioner of the Presidency Division and Magistrate of Nuddea.

Read and analysed a written statement forwarded by Major Lamb, Deputy Commissioner of Durrung, and Mr. Driberg, Assistant Commissioner of Mungledye.

1*st March*.—Met at 11 A. M. Mr. Taylor, Superintendent of the Municipal Gaokhana, Entally, attended for the purpose of giving information as to past outbreaks of murrain among municipal cattle. His evidence was recorded, and more evidence of a statistical nature was promised by him.

2*nd*.—Tents and office were despatched to Sealdah preparatory to the Commission proceeding to Chooadangah to-morrow morning on a tour of inquiry.

3*rd March.*—Yesterday afternoon, it was ascertained that the tents and office had not been despatched by the Railway Company. The Commission were consequently unable to proceed as intended. Calcutta.

4*th.*—Proceeded to Chooadangah by 7-30 A. M. train. Mr. Cotton, Assistant Magistrate of Chooadangah, had attended yesterday to meet the Commission, but was unable to leave his work at Sindooree a second time. Some cattle were brought in by villagers in the afternoon, affected by murrain, and placed under out-door treatment. Chooadangah. D. Nuddea.

5*th.*—Visited the village of Dowlutdear where several sick cattle were seen and examined. Notes were taken of each case.

In the forenoon the evidence of three men of this village was taken and recorded. In the afternoon several cattle were brought for treatment by the villagers of Chooadangah.

6*th.*—Visited Chooadangah village and saw several sick cattle.

In the afternoon sick cattle were brought for treatment, and medicine was given in each case.

7*th.*—Visited the village of Tengramaree where several cattle sick of *bosonto* were seen and examined, and the evidence of several ryots taken.

In the afternoon several sick cattle were brought for treatment.

8*th.*—Two *post-mortem* examinations were performed of cattle which had died of the prevailing disease. During the afternoon the village of Belgachi was visited, sick animals examined, and ryots questioned, careful notes being taken; sick cattle were treated in the evening.

9*th.*—Visited the village of Taltollah, where *bosonto* had prevailed. Saw some cases of alleged "*Khuriah.*" On return, a bullock, goat, and sheep were inoculated with dried fæces brought from Assam. At 2-30 P. M. proceeded to visit the hât of Pudwobilia, where cattle from the surrounding villages are sold. The place is about 9 miles distant from camp, and some 12 beasts were seen, some suffering from *gootee*, and others convalescent from that disease.

On return, a *post-mortem* examination was performed of an animal which had eaten castor-oil leaves and seeds, and died in consequence. The leaves and seeds were found in great abundance in the first stomach whose walls were slightly congested. The second and third stomachs were also more or less congested. The fourth stomach was much congested, especially at the borders of the folds. The contents of the intestines were liquid, but the walls and mucous membrane were healthy; sick cattle were seen and treated as usual.

10*th.*—Visited the village Nundunpore and examined several cases of *khuriah* (foot and mouth disease); *bosonto* also prevailed in this village. A cow which was brought last night suffering from the effects of eating castor-oil seeds and leaves and died, was examined, and the appearances found corresponded to those above described. In the evening, sick cattle were treated, and a *post-mortem* examination performed.

11*th.*—Rode to Katchakatta Indigo Factory, 7 miles from camp. Examined several ryots from neighbouring villages, whose evidence has been recorded. On return, performed three *post-mortem* examinations, one of *puschima* among them.

12*th.*—Hospital cases examined morning and evening; no village visited. Two *post-mortem* examinations were performed in the morning, but the subjects were rather decomposed.

13*th.*—Hospital visited morning and evening.

14*th.*—The Commission intended proceeding to the village of Utli near Ramnugger Station, where *puschima* was reported to prevail, and arrangements were made accordingly. It was ascertained, however, late last night that no *puschima* existed in the village, and the visit to that part of the district was consequently postponed.

Chooadangah. A *post-mortem* examination of a case of *bosonto* was performed in the evening.

15*th March.*—Hospital cases were examined as usual. Every endeavour is being made to ascertain where the disease *puschima* exists, in order that the Commission may have an opportunity of more fully examining this form of murrain. The disease *bosonto* has been thoroughly investigated, *khuriah* has been seen and identified, and it only remains now to determine the nature, &c., of *puschima*.

16*th.*—Visited the village of Hazrahattee, about 2 miles to the north of camp. No disease existed there. Hospital visited morning and evening as usual.

A *post-mortem* examination of a case of *bosonto* was performed in the afternoon.

17*th*—Mr. Hallen proceeded to Calcutta, in order to have an interview with His Excellency the Viceroy. Mr. Mangles and Baboo Hem Chunder Kerr proceeded to Sindooree where several ryots were examined. Their evidence was duly recorded, and corresponded closely with that obtained from ryots elsewhere. No disease exists at Sindooree at present. Hospital cases examined morning and evening; the bullocks inoculated on the 9th and 10th have not as yet exhibited any symptoms of disease; the goats and sheep also evince no sign of affection by *gootee*.

18*th.*—Hospital cases visited as usual. None of them exhibit as yet any unusual symptom.

No tidings of *puschima* existing anywhere in the neighbourhood comes in.

Inquiries are still being made, however.

19*th*—Several moochis (leather dealers) of this place and neighbourhood were examined, and their evidence recorded, for the purpose of finding out all particulars regarding the hide trade. Hospital cases visited as usual.

20*th.*—Hospital cases visited morning and evening.

21*st.*—Visited the village of Hazrahattee where the disease had existed, but had disappeared about a week before.

During the afternoon the deposition of a very intelligent ryot was taken at length and recorded.

22*nd.*—The village of Hatikatta was visited, and the evidence of the villagers taken with care and recorded.

During the day, several ryots were examined; their depositions were duly recorded.

23*rd.*—The village of Alukdia was visited and evidence taken and recorded as usual. Mr. Hills, a planter of Nischindapore, gave some evidence which has been recorded; several other depositions of natives were taken during the afternoon and recorded.

The evidence of Mr. W. Shirreff, an indigo planter, Manager of the Sindooree and Taltollah Concerns, was taken and recorded.

The bullock, goats, and sheep not having become affected by inoculation, were disposed of.

24*th.*—The evidence of Mr. Cotton, Assistant Magistrate of Chooadangah, was taken. Mr. Mangles proceeded to Nischindapore to have an interview with Mr. Hills, the proprietor of the concern. The evidence of a *goalla*—milkman—was taken in the evening.

Calcutta. 25*th.*—The Commission proceeded to Calcutta. Dr. McLeod went to Lucknauthpore, and took some evidence as to the existence of cattle disease in the neighbourhood.

26*th.*—The office not having as yet arrived, no meeting was held.

27*th.*—Mirza Mahomed Ali Jan Deputy Collector of Humeerpore, has now joined the Commission

28*th March.*—Met in office at 11 A. M. Employed in revising *post-mortem* examinations. Mr. Hallen saw a case of foot and mouth disease near his residence at Momenpore. Inquiries are also being made as to the existence of *gootee* in the neighbourhood of Calcutta. The death of a calf from diarrhœa and passing of blood per anum (dysentery) occurred within a quarter of a mile of Mr. Hallen's residence. Calcutta.

29*th.*—Met in office at 11 A. M. Continued revision of *post-mortem* records. Mr. Hallen had an interview with His Honor the Lieutenant-Governor of Bengal. Baboo Hem Chunder Kerr proceeded to Mugrah and the neighbourhood, and to Serampore, in order to ascertain to what extent disease exists in that locality, and how the Commission can most conveniently proceed to investigate the matter. He ascertained that disease existed in the villages of Akna, Dalimba, Sonatekri, Melchi and Baloregunge near Mugrah; that as many as 300 head of cattle had died in Dalimba, and nearly 200 at Akna, the disease having broken out there in November. At Serampore he found that disease existed at Bagdanga within 2 miles of the station of Chandernagore.

30*th.*—Met in office at 11 A. M., and continued revising *post-mortem* examinations.

31*st.*—The Commission proceeded by the East Indian Railway at 7-40 A. M. to Chandernagore, and thence to the village of Bagdanga, Thannah Biddyabatti, Sub-division Serampore, District Hooghly. Three cases of rinderpest were found and carefully examined. The evidence of villagers of Bagdanga and Noapara was also taken; disease had existed in the latter place to a limited extent in January last. Bagdanga. D. Hooghly.

The Commission returned to Calcutta by the afternoon train. Mr. Mangles has left the Commission, having been appointed Collector of Patna.

1*st April.*—Met in office at 11 A. M., and continued revising *post-mortem* examinations, &c.

2*nd.*—Started at 4-30 A. M. for Oolooberiah, where the Commission arrived at 9 A. M. Inspected the cattle for sale in the market, and made inquiries, and took evidence regarding—1st, districts whence cattle are brought for sale; 2nd, localities to which they are removed after sale; and 3rd, existence of disease. All the facts ascertained have been carefully recorded. Returned to Calcutta at 6 P. M. Oolooberiah. D. Midnapore.

3*rd.*—Sunday.

4*th.*—Office at 11 A. M. The evidence of Mr. R. Harvey, Superintendent of the Municipal Cattle, Northern Division, was carefully taken and recorded.

5*th.*—Visited Ooltodangah Cattle Market and some of the Manicktollah cattle sheds. Evidence was taken from goallas and others, and duly recorded. Ooltodangah.

6*th.*—Visited Kidderpore Cattle Market and inspected the cattle carefully; no disease was found. Some evidence was recorded regarding the cattle and hide trade. Kidderpore.

7*th.*—The evidence of Mr. Dissent, Conservancy Inspector, was taken and recorded.

Several cattle byres at Manicktollah were visited in the afternoon, six cases of *gootee* examined, and the evidence of several goallas taken and recorded. Manicktollah.

8*th.*—The Commission proceeded to Mugrah in the Hooghly District; the office, &c., proceeded in the morning, and Mr. Hallen in the afternoon. Mugrah. D. Hooghly

9*th.*—Visited the village of Akna. Saw several sick cattle and took the evidence of the Izardar of Dalimba which has been recorded. Mirza Mahomed Ali Jan visited the village of Baloregunge where cattle disease is prevailing virulently.

10*th.*—Sunday.

11*th.*—Performed two *post-mortem* examinations at Baloregunge. Visited this village again in the afternoon and took the evidence of several villagers.

Mugrah. 12*th April.*—Visited Baloregunge and Akna. Examined several cattle in different stages of disease. Baboo Hem Chunder Kerr proceeded to Burdwan for the purpose of inquiring where cattle disease existed in that district and making arrangements for proceeding there.

13*th.*—Proceeded to Akna and took the evidence of several inhabitants of Akna and Dalimba. In the evening the evidence of several inhabitants of Punsoor village was taken.

14*th.*—Proceeded to Melchi and found the disease (*gootee*) prevailing there. The depositions of villagers were taken and recorded as usual. Mr Hallen proceeded to Hooghly to see the Commissioner of the Burdwan Division and Magistrate of Hooghly, with reference to the prevailing murrain. In the afternoon several villages to the east of Mugrah were visited.

Burdwan 15*th.*—A *post-mortem* examination was performed at Baloregunge and the village of Bashdehpoor visited. At 3-15 P. M. proceeded to Burdwan and took up quarters in the circuit house.

16*th.*—Proceeded to the village of Taleet, 6 miles west of Burdwan, where the disease (*gootee*) was found prevailing. The depositions of the inhabitants of this village were taken. Had an interview with the Collector in the afternoon.

17*th.*—Visited the village of Katgoora, 4 miles south-west of Burdwan. Saw several cases and performed one *post-mortem* examination.

18*th.*—Visited the goalla sheds at Pallapookur and took the evidence of some goallas.

A visit to the Sub-Division of Kutwa was contemplated, but as no recent reports have been received from that quarter, it was determined to proceed to the Boodbood Sub-Division.

19*th.*—Visited the villages of Gangpore and Bham. Baboo Hem Chunder Kerr and Mirza Mahomed Ali Jan proceeded to the Sub-Division of Boodbood, in order to make inquiries as to the murrain prevailing there among cattle.

Boodbood 20*th.*—Mr. Hallen and Dr. McLeod proceeded to the villages of Mirzapore and Ramnara, and took evidence there. They went by afternoon train to Boodbood, where the other members, who had gone on before, had visited three villages, and taken the evidence of five individuals. A *post-mortem* examination was performed at 5 P. M., and several cases were seen in the village of Dukinpara, where Baboo Hem Chunder Kerr had taken detailed evidence in the morning.

21*st.*—The villages of Bheershenny and Ghor were visited in the morning, and a *post-mortem* examination performed. Several depositions were taken from the inhabitants of surrounding villages. The Commission left Boodbood by the 9-15 P. M. train, and arrived at Burdwan at 12 P. M.

22*nd.*—Left Burdwan by the night mail for Cawnpore.

23*rd.*—On the rail *en route* for Cawnpore.

24*th.*—Sunday, arrived at Cawnpore, 6 A. M.

Caw npore. 25*th.*—Mr. Hallen had an interview with Mr. Halsey, Collector of Cawnpore. Ascertained that no cattle disease existed in his district. Preparations are being made for proceeding to Humeerpore, and Mirza Mahomed Ali Jan started for that station in the evening, in order to arrange for the reception of the Commission, &c.

26*th.*—Started for Humeerpore.

27*th.*—Arrived at Humeerpore, 8 A. M.

Humeerpore. Several depositions of inhabitants of the village Ramerie and Humeerpore were taken during the day.

28*th.*—6 A. M. Visited the villages of Ramerie and Humeerpore and saw several cases of *khurphutta* (foot and mouth disease). The cattle of these villages were collected together in two places and were carefully inspected. No case of *mahta* was, however, seen. A carcase was examined of a bullock which

had died during the previous night, but it was found partially devoured by vultures. The stomachs and most of the intestines, however, remained uneaten, and showed no evidence of rinderpest. It was afterwards ascertained that this animal had been choked by castor-oil leaves. Saw two cases which were said to have recovered from *mahta* last year. Beyond being out of condition, the animals showed no other sign of disease. Some of the cattle seen were of excellent breed and well conditioned and cared for, and one fine country bull was seen with the Humeerpore flock. Humeerpore.

The evidence of some agriculturists and chamars—leather dealers—was taken and recorded during the day. The carcase of a calf which had been brought in was examined, but no sign of rinderpest was observed.

29*th April.*—10-30 A. M., visited the villages of Oorpurah and Chandowki, inspected the cattle, and examined the villagers.

No *mahta* was found.

During the day, evidence was taken. Zemindars and chamars from distant villages were examined.

The carcase of a calf was brought for examination, and traces of a previous attack of rinderpest found. Notes were taken of the appearances, and a specimen retained.

30*th.*—Crossed to the Cawnpore side of the Jumna, and took the evidence of the villagers of Rampore and Lahorymow. Started by palki dâk for Cawnpore at 5 P. M.

1*st May.*—Arrived at Cawnpore 8 A. M.; office arrived in the evening. Cawnpore.

2*nd.*—Proceeded to the Commissariat Cattle Yard in order to make inquiries.

The butcher serjeant, a *bepari*—cattle dealer,—and others were questioned as to their knowledge of the recent or past prevalence of *mahta.*

Visited the municipal slaughter-house, where several carcases of apparently healthy animals were seen, and the three municipal bulls which were greatly admired. One of these, for milch cows, was of pure Alderney breed; one of the two bulls kept for agricultural purposes was country-bred, and the other, half Australian.

11 A. M. Had an interview with Captain Stewart, the Officer in charge of the Government Tannery, and proceeded to visit the places of some chamars who deal in hides. In the evening, Baboo Hem Chunder Kerr and Mirza Mahomed Ali Jan visited several dairies, and made inquiries as to the prevalence of disease in recent years. Mr. Hallen and Dr. McLeod went to the Commissariat yard, and saw the bullocks, among which two or three convalescent cases of foot and mouth disease were shown.

3*rd.*—Mirza Mahomed Ali Jan and Baboo Hem Chunder Kerr proceeded to visit some villages to the north of Cawnpore, close to the Grand Trunk Road, namely Kakuri, Sadoolapore, and Tantia. Evidence was taken from the villagers at those places. Mr. Hallen and Dr. McLeod again visited the Government Tannery, and obtained some additional information regarding the hide trade and the mode in which hides removed from diseased animals exhibited indications of the disease after tanning. Arrangements were made for the purchase of some hides removed from animals dying of *debee* (rinderpest), with a view of ascertaining more precisely what these changes consisted in.

4*th.*—Left Cawnpore and proceeded to Lucknow at 8 P. M. Lucknow.

5*th.*—Mr. Hallen called upon the Chief Commissioner, and had an interview with Mr. Harrington, his Secretary, in order to ascertain whether any epizootic among cattle prevailed anywhere in Oudh, and make arrangements for proceeding thither. Inquiries were immediately set on foot for that purpose. Meantime, the Commission endeavours to obtain as much information on the subjects of cattle, cattle breeding, and the hide trade, in and about Lucknow, as possible.

Lucknow.

6th May.—The evidence of Mr. A. Foy, a hide-dealer and landowner, was taken at 7 A. M. and carefully recorded. Much and valuable information was obtained and several sources of additional information suggested.

Letters were received reporting the continuance of cattle disease in the districts of Shahabad and Etawah.

Mirza Mahomed Ali Jan proceeded to Bijnour in order to make inquiries as to the present prevalence of cattle disease there. He found that no disease existed there at present, but that last year murrain prevailed in the locality to a severe degree. From the detail of symptoms it is evident that the murrain is the same as that already found in Lower Bengal and recognized as rinderpest.

7th.—Efforts are still being made to ascertain whether cattle disease exists in any part of Oudh, in order that the Commission may have an opportunity of determining its nature by personal investigation. Arrangements were made to proceed to Bijnour to-morrow morning. Mr. Hallen called on Colonel Aitken, V. C., Inspector General of Police, and Colonel Barrow, District Superintendent of Police, to request their assistance in obtaining information.

8th.—Proceeded to Bijnour at 4-30 A. M. Saw and examined the principal inhabitants of the village, cultivators, chamars, and others. Obtained abundant evidence that rinderpest prevailed in this village and the neighbourhood last year and to some extent this year; but elicited no evidence of disease existing at present, either there or in the vicinity.

Bunee.

9th.—Proceeded to Bunee in the afternoon (seven miles south-west of Lucknow) in order to prosecute inquiries at Banthra and the neighbouring villages. A very intelligent and active Inspector of Police (Ramnarain) was placed at the disposal of the Commission by Colonel Aitken; this officer lost no time in initiating a careful and searching investigation.

10th.—Proceeded to the village of Paharpoor (fifteen miles south of Lucknow) where some eighteen cases of rinderpest were seen and the evidence of the villagers carefully recorded. During the day several depositions were taken of landowners, cultivators, chamars, and others.

11th.—5. A. M. Performed a *post mortem* examination of a cow which was seen yesterday and died of rinderpest during the afternoon.

6-30 A. M. Proceeded to the village of Arownia, (thirteen miles south-west of Lucknow) where several cases of rinderpest were seen, and some evidence was recorded.

Returned to Lucknow in the afternoon. Mirza Mahomed Ali Jan proceeded to Oonao in order to ascertain whether cattle plague exists in that district in an accessible locality.

12th.—A telegram was received from Mirza Mahomed Ali Jan, stating that there was no need to visit Oonao. The Commission, therefore, proceeded to Cawnpore *en route* for Phappoond in the Etawah District.

Cawnpore

13th.—Mr. Hallen called on Mr. Halsey the Collector, in order to ascertain whether any information about murrain had been obtained during the absence of the Commission at Lucknow, also on Dr. Loch, the Civil Surgeon, with a view to obtain information as to the hide trade and cattle poisoning from the chamars in the jail. He promised to obtain some information from an intelligent Inspector of Police on these points.

Phappoond. D. Etawah.

14th.—Left Cawnpore at 6. A. M., and arrived at Phappoond at 8 A. M. The office followed in the evening. The Tehsildar, Syud Davur Ali, who came up in the same train from Cawnpore, having been there for two days, stated that he had received no instructions from the Collector, and that no disease had existed in the neighbourhood of Phappoond for two months. He was instructed to make local inquiries without delay, and sent out several peons with the object of collecting information. In the afternoon he informed the Commission that instructions had been received from the Collector of Etawah to render the Cattle Plague Commis-

sion every assistance. The result of the local inquiries was that no disease prevailed in the neighbourhood; that disease had prevailed in a village, but had disappeared about a month ago. Phappoond.

15*th May.*—5-30 A. M. In accordance with the information obtained from the Collector of Etawah, the Commission proceeded to visit the village of Gowrie in which cattle disease was reported to prevail. On the way thither in passing through the village of Nounpore (an out-village or purwa of Tajpore) a bullock was seen in the middle of the village, affected with rinderpest in a severe degree. This and several convalescent animals were examined and information obtained from the villagers as to the prevalence of cattle disease in their own and the neighbouring villages. The village of Gowrie was next visited and there several animals affected with rinderpest were also seen and examined, and the evidence of the villagers recorded. The Commission then proceeded to Tazpore, where more sick animals were seen and additional evidence taken. Thence the village of Fukeerpoor was visited and one or two animals evidently suffering from the prevailing disease seen, though the villagers manifested a great inclination to conceal the fact that disease existed there. It was afterwards ascertained that disease was only commencing in this village.

16*th.*—Proceeded at 5 A. M. to Terraiah where murrain had existed for a month, but had disappeared about a month ago. No cases were seen here except that of one buffalo which had recovered. The evidence of the villagers was taken and recorded. The several members of the Commission returned home by different routes, with a view of obtaining information as to the prevalence of murrain in the surrounding villages. As Mr. Hallen was returning through the villages of Bunkipoora and Sainugger, close to the former village his attention was attracted by a number of vultures feeding on a carcase. This carcase on examination exhibited sufficient indications of the animal having died of rinderpest. At Sainugger a buffalo cow which had died during the previous night was being skinned by the chamars of the village, and a careful examination was made on the spot. This proved to be a case of a most severe type of rinderpest In the evening the evidence of the Zemindar of Sainuggur was taken at Debiapore. A telegram was received from the Military Secretary to the Viceroy, authorizing the Commission to proceed to the Punjab on the reception of authentic information as to the prevalence of murrain there. Accordingly telegrams were despatched to the Commissioners of Lahore and Multan, inquiring whether murrain existed in their divisions, more especially in the districts of Gujranwalla and Jhung where cattle disease had been reported to exist. Pending the receipt of replies to these telegrams, sufficient evidence, &c., having been obtained at Phappoond, the Commission resolved to proceed to Agra with a view to ascertain whether disease actually existed or not in that district.

17*th.*—Proceeded to Agra. Agra.

Mr. Hallen having casually met the Commissioner and Collector in the evening, suggested that strict inquiries should be instituted, as he believed from the experience gained in the North-West that disease would be found. Mirza Mahomed Ali Jan also expressed a belief that by inquiry amongst his relations and friends in Agra, he would be enabled to obtain information of the existence of murrain.

18*th.*—A telegram was received from Gujranwalla, stating that murrain had existesd during the months of January, February and March, but had died out toward the end of March. With the assistance rendered by the Commissioner and Collector, the Commission had the opportunity of inspecting several hundred head of cattle belonging to the city of Agra, among which two cases recovering from rinderpest and one buffalo suffering from a severe form of this disease were found.

19*th.*— No reply has been received from the Multan Commissioner. Another telegram was despatched to Multan, soliciting immediate reply to former telegram. Morning and evening the Commission inspected cattle in the city.

Agra

20th May.—The buffalo cow above referred to (18th) having died last evening was carefully examined. Unmistakeable symptoms of malignant rinderpest were found. The Collector attended the *post-mortem* examination. To him on the spot, as also to the Commissioner subsequently, the President explained the necessity of instituting searching inquiries and establishing systematic reports. Mirza Mahomed Ali Jan accompanied by the Tehsildar, visited the villages Barakur, Angota, Futtehpoor, Jehanpoor, Tahra and Jotala, where he obtained abundant evidence of the prevalence of rinderpest in these and the surrounding villages.

No reply from the Commissioner of Multan having been received, it was resolved to proceed to Futtehpore.

Futtehpore.

21st.—Baboo Hem Chunder Kerr, who had proceeded to Futtehpore on the previous day, saw the Collector, made all arrangements for the prosecution of the inquiry in this district, and proceeded to the village of Subedar-ka-poorwa where he saw two cases of rinderpest and took evidence from the villagers. The remaining members of the Commission followed by evening train from Agra and arrived on the 22nd at 7 A. M.

22nd.—Arrangements have been made by the Collector for the Commission to proceed to Hosseingunge (ten miles distant from the station) whither it is intended to proceed to-morrow.

23rd.—4 A. M. Proceeded to Hosseingunge (ten miles north-east of the station) where twenty cases of rinderpest were seen. Some of these were recently attacked, but the majority were old cases. Witnesses were in attendance from the villages of Narainpore, Motyapore, Guneshpore, and Satraonpore, whose evidence was recorded at length. Two of the cases were evidently of a severe type, and as it may be expected that one or both will die within a day or two, strict directions were given to keep the carcases safe for *post-mortem* examination, and report the death at once for the purpose of examining the body.

24th.—Proceeded to the village of Subadar-ka-poorwa, where several animals, convalescent from rinderpest, were seen and evidence taken from the villagers as to the character of the disease, past outbreaks, &c.

25th.—Meah Golam Serwar, Veterinary Assistant, proceeded to Hosseingunge to ascertain whether any probability of having a *post-mortem* examination within a day or two existed, and prepared to perform one, if opportunity offered. He returned at 11 A. M., reporting that he had found a buffalo just dead from rinderpest at the village of Narainpore, had performed a *post-mortem* examination, and preserved the most important parts for inspection. These were brought in and examined in the evening. The parts, basket, &c., were carefully buried. Careful notes were taken of the result. A report having been received from the village of Cheetisapore not in accordance with the previous uniform experience of the Commission with regard to the behaviour of the disease, several of the villagers were brought into the station by the Tehsildar and their deposition carefully taken. It was then found that the extraordinary report (that sixteen animals had been taken ill one day and had died on the next day) was a fabrication of the village Putwari. The Tehsildar of Futtehpore rendered valuable assistance under the direction of the Collector.

The Commission left Futtehpore at 9 P. M., and reached Allahabad at 11 P. M.

Allahabad

26th.—Mr. Hallen had an interview with the Assistant Secretary to the Government of the North-Western Provinces, the Lieutenant-Governor and Staff and Secretary to the Government of the North-Western Provinces having gone to Nynee Tal on the 23rd. No information or order was obtained to alter the plan already agreed upon, namely, to proceed to Benares where disease was reported to prevail, the nature of which it is the particular desire of His Honor the Lieutenant-Governor, North-Western Provinces, that the Commission should determine.

27th.—Two members of the Commission, Dr. McLeod and Baboo Hem Chunder Kerr, proceeded by night train to Benares. In consequence of a report

received from the Commissioner of Allahabad containing important information from Jounpore, Azimghur and Ghazeepore, relating to cattle poisoning, Mr. Hallen decided to remain at Allahabad in order to have an interview with the Commissioner. Mirza Mahomed Ali Jan also remained in Allahabad in case his assistance might be needed. Allahabad.

28*th May.*—Mr. Hallen called on Mr. Maine, Commissioner of Allahabad, and had an opportunity of perusing a report recently submitted by Captain Dodd, Personal Assistant to the Inspector General of Police, North-Western Provinces. Mr. Maine stated that in forwarding this report to Government, he had recommended that it should be submitted for the consideration of the Cattle Plague Commission, and suggested the propriety of the Commission's visiting Jounpore to obtain information on the subject of cattle poisoning.

29*th.*—Mr. Hallen and Mirza Mahomed Ali Jan arrived at Benares at 9 A. M. Arrangements were made by the Collector for the Commission to inspect diseased cattle to-morrow morning. Benares.

30*th.*—5 A. M. Proceeded to Secrole, a suburb of Benares, where a *post-mortem* examination was performed, and four sick animals were examined (suffering from rinderpest). Mr. Lawrence, the Collector, accompanied the Commission to Secrole. Thence went to the village of Mordaha, five miles off, and saw eighteen cattle suffering from rinderpest in a mild form. Mr. Lemon, Veterinary Surgeon, Royal Horse Artillery, who had examined and reported on cattle disease in the district, accompanied the Commission to both places.

31*st.*—Further inquiries are being made with reference to murrain.

1*st June.*—Performed a *post-mortem* examination of one of the bullocks seen on the 30th at Secrole, also of another bullock in Pundaipoor which had died suddenly on the previous night.

Proceeded to Jounpore at 10 P. M.

2*nd.*—Arrived at Jounpore 5 A. M., had an interview with Mr. Benson, the Collector, explaining to him the reason of coming to the station and requesting him to direct that searching inquiry should be made with a view of finding cattle suspected of being poisoned during the stay of the Commission at Jounpore, and asking for an abstract of records of convictions for cattle poisoning during the preceding year. Jounpore

3*rd.*—Mirza Mahomed Ali Jan, who had arrived in Jounpore on the 1st, had informed Mr. Benson of the wishes of the Commission, and orders had at once been issued to the Police to ascertain if any cattle were dying suddenly within a radius of six miles of the station. Mirza Mahomed Ali Jan visited one or two villages in the neighbourhood in the evening.

No sudden death among cattle has been as yet reported. Mirza Mahomed Ali Jan went out to visit neighbouring villages morning and afternoon.

4*th.*—Employed during the day in examining and taking notes and abstracts of 51 cases of conviction for cattle poisoning during the past year in the Jounpore Magistracy. At 5 P. M. visited the village of Adampore, and found no disease. During the taking of evidence the villagers stated that four or five years ago poisoning by the chamars had reached such a pitch that an agreement was drawn up on stamped paper, stipulating on the part of the chamars, that on the payment of a sum of money (Rs. 8) no more deaths should take place among their cattle, and holding themselves responsible for any future deaths. A copy of this document has been taken.

5*th.*—Proceeded to the village of Shikarpoora where no disease was discovered. Evidence as to past loss of cattle was taken.

6*th.*—Took the evidence of two villagers of Luckunpore where a similar document to that above alluded to was drawn up about the same period, which subsequently was destroyed by mice. Baboo Hem Chunder Kerr left Jounpore on the 5th for Benares, with the object of preceding the other members of the Commission to the Shahabad District, in order to see that arrangements for conveyance, &c., had been made. The remaining members of the Commission left Jounpore for Benares at 10 P. M.

Jounpore.

7th June.—Arrived at Benares at 5 P. M.

8th.—Left Benares at 6-5 P. M.; arrived at Zamaniah at 8-23; proceeded to Mohunneah in the Shahabad District.

Shahabad.

9th.—Arrived at 1 A. M. at Mohunneah eighteen miles from the Zamaniah Railway Station. 5-30 A. M., visited the village of Belowrie and saw six cases of rinderpest, also took evidence of past outbreaks from villagers.

10th.—5-30 A. M. Proceeded to Belowrie and held a *post-mortem* examination of a cow (in calf) which had died of rinderpest: notes recorded, specimens of third stomach preserved.

5-30 P. M. Held another *post-mortem* examination of a cow brought in from a neighbouring village and found the cause of death to be hoven.

Proceeded at 6 P. M. to Belowrie to examine the carcase of a bullock which had died during the day. Found that hoven had caused death.

11th.—2-45 A. M. Left Mohunneah and arrived at Zamaniah at 6 A. M., telegraphed to the Magistrate of Patna enquiring whether disease still existed in that district. Received a reply in the negative. 8-23 P. M., left Zamaniah by rail.

Sahebgunge.

12th.—9-15 A. M. Arrived at Jamalpore. 9 P. M., left Jamalpore and arrived at Sahebgunge at 11-48 P. M.

13th.—The Commission had hoped to be able to leave by the ferry steamer at 9-30 A. M. for Caragola *en route* to Purneah, but was detained by heavy rain.

14th.—Recorded evidence in the village of Sahebgunge, of *gootee* having attacked cattle there two years ago.

Purneah.

15th.—Left Sahebgunge by steamer at 10 A. M., arrived at Caragola at 2 P. M., and reached Purneah at 11-30 P. M.

16th.—Visited with the District Superintendent of Police, Mr. Cockburn, the village of Morunga, about two miles from the Dâk Bungalow, and saw a case of rinderpest in a buffalo.

17th.—Again visited village of Morunga, also Modhoobunee, and saw four cases of rinderpest. Recorded evidence. Mr. Hallen had an interview last evening with the Magistrate. Recorded evidence of the agent of Munnoo Khan, hide merchant. The Commission left Purneah at 5 P. M., and arrived at Caragola at 8-3 P. M.

18th.—The Commission proceeded at 6 A. M. by steamer from Carogola and arrived at Sahebgunge at 9 A. M., and went by rail to Nulhatee, arriving there at 7 P. M.

Bockhara.

D. Berhampore.

19th.—5 A. M. Proceeded to Bockhara by rail arriving there at 6-30 A. M. Visited the villages of Bhoorcoonda and Beluria and found rinderpest. Inspected several cases and recorded evidence of the inhabitants of both villages.

20th.—6 A. M. Visited the villages of Telongol, Rasbelooria, Delkhoria and Dohalee and inspected many cases of rinderpest and recorded evidence of the inhabitants of the above-named villages. Returned to Nulhatee at 1-30 P. M., left Nulhatee at 8-30 P. M.

21st.—Arrived at Burdwan at 2-30 A. M. The Commission intended proceeding from this place to the district of Hazareebaugh in the Chota Nagpore Division, (from which reports of cattle disease had been received) but were deterred by the receipt of a letter from that district stating that cattle disease had disappeared.

Under these circumstances it was resolved to proceed to Calcutta until further arrangements could be made.

22nd.—Proceeded to Calcutta at 6-15 A. M., arriving at 9 A. M.

Calcutta

23rd June to 4th July.—The Commission was engaged in office work during this period and in preparations for proceeding to visit the province of the Punjab.

J. G. Charles, Esq., Bengal Civil Service, joined as a Member of the Cattle Plague Commission on the 29th June.

5th July.—Met in office from 11 to 5 P. M. Messrs. Hallen and Charles pro- Calcutta.
ceeded by 8-12 P. M., express train to Buxar (Mirza Mahommed Ali Jan having gone on in advance to Bulandshahur). Dr. McLeod and Baboo Hem Chunder Kerr remain in Calcutta to carry on that office work.

6th.—5 P. M. Arrived at Buxar. Buxar.

7th.—Had an interview with Mr. Armstrong, C. S., Colonel Plowden, and D. Shahabad.
Major McDougall. No murrain at present prevailed but rinderpest and foot and mouth disease prevail more or less every year.

8th.—Recorded the evidence of two cultivators at Kurantadee. Left Buxar at 12 o'clock, arrived at Zamaniah at 1-30 P. M., and Ghazeepore 8 P. M.

9th.—Had an interview with Mr. Oldham, the Collector of Ghazeepore, on Ghazeepore.
the subject of murrain and cattle poisoning. No cattle disease there reported; but obtained valuable information with regard to previous outbreaks. Papers in the Magistrate's Office relating to the subject are to be forwarded to the Commission. Left Ghazeepore 1 P. M., arriving at Allahabad at 11-5 P. M.

10th.—Sunday; at Allahabad.

11th.—12-55 A. M. Left Allahabad, arriving at Chola 3-50 P. M.

12th.—Left Chola at 6 A. M. and arrived at Bulandshahur at 8 A. M. Had an Bulandshahur.
interview with Mr. Willock, the Collector. 5 P. M., visited with the Collector the village of Chandpore. Found cases of rinderpest and foot and mouth disease.

13th.—6 A. M. Visited the village of Yakoobpore seven miles from Bulandshahur, finding several cases of rinderpest.

5 P. M. Visited village of Jowligarh nine miles from Bulandshahur, finding some severe cases of rinderpest.

14th.—Performed the *post-mortem* examination of a buffalo which had been seen the day before, affected with rinderpest at Yakoobpore. Mr. Willock accompanied the Commission in their visits to the several villages. 6 P. M., left Bulandshahur for Chola, arriving at the latter place at 7-30 P. M.

15th.—Left Chola 4-38 A. M., arriving at Delhi 7-30 A. M.

16th.—Called on the Deputy Commissioner of Delhi to obtain information Delhi.
as to the best means of proceeding to Hissar. No murrain is at present reported from Delhi, but the Tehsildar is to accompany Mirza Mahomed Ali Jan in the search for murrain in the city.

17th.—Mirza Mahomed Ali Jan and the Tehsildar find that no disease exists at present, but ascertain that there was an outbreak about six months ago.

18th.—Left at 5 P. M. for Hissar arriving at Rhotuck on—

19th.—at 9 A. M. Left Rhotuck at 5 P. M and got to Hansi on—

20th.—at 11 A. M. Left Hansi at 5 P. M. arriving at Hissar the same Hissar.
evening at 10 P. M.

21st.—Had an interview with the Commissioner, Deputy Commissioner and Major Robinson of the Government cattle farm. Visited Government cattle farm and inspected stock at 5 P. M.

22nd.—Recorded evidence of stud salutries, saw one bullock castrated, left Hissar at 5 P. M.

23rd.—Arrived at Rhotuck at 10 A. M., left Rhotuck 8-30 P. M.

24th.—Arrived at Delhi 10 A. M. Delhi.

25th.—Saw one case of rinderpest—a bullock belonging to A. Skinner, Esq., also an old case of *khuriah* in another bullock, the property of the same gentleman. Left Delhi 5-48 P. M. arriving at Meerut 8-20 P. M.

26th.—Called on the Commissioner and Collector who were both absent from the station. Made arrangements for proceeding to Haupper.

27th.—Arrived at Haupper at 11 A. M. Owing to the Tehsildar being away Haupper.
at Bulandshahur could not satisfactorily ascertain where disease was to be found. D. Meerut.

Haupper. 28*th July*.—Visited village of Dhanowra about four miles from Haupper. At Dhanowra investigated an outbreak of rinderpest which had proved very fatal. Held a *post-mortem* examination on a buffalo cow which had died the day before from rinderpest. Recorded evidence of villagers as to present and past outbreaks.

29*th*.—Visited stud at Babooghur and questioned several old Government bullock-keepers on the subject of cattle murrain.

30*th*.—Left Haupper at 7-15 A. M. arriving at Meerut at 10-30.

Saharunpore. 31*st*.—Commission left Meerut at 10-32 A. M. and arrived at Saharunpore at 2 P. M.

1*st August*.—Had an interview with the Collector, Mr. Jenkinson, and made arrangements for visiting the village of Reri.

2*nd*.—At 6 A. M. the Commission proceeded to the village of Reri, inspected many cases of severe rinderpest and made a *post-mortem* examination of the carcase of a buffalo which had died the night before of rinderpest. Recorded the evidence of villagers regarding the outbreak.

Loodianah. 3*rd*.—Left Saharunpore at 2-30 P. M. and arrived at Loodianah at 9-15 P. M.

4*th*.—Had an interview with the Deputy Commissioner and made arrangements for proceeding to the village of Kakoowara next day.

5*th*.—Proceeded to the village of Kakoowara about four miles north-west of Loodianah and investigated the murrain at that place. Saw only two cases of the disease (rinderpest) one of which died and was examined after death. Took the evidence of the villagers.

6*th*.—As no further reports of murrain could be obtained, made arrangements for leaving Loodianah on the following day.

Umritsur. 7*th*.—Left Loodianah at 7-30 and arrived at Umritsur at 5-30 P. M.

8*th*.—Had an interview with General Taylor, the Commissioner, and the Officiating Deputy Commissioner, Mr. Gardner, to make arrangements for visiting villages affected with murrain.

9*th*.—5-30 A. M. Visited villages of Vadala and Mâl, finding several cases of rinderpest at the former village, and that one cow had died at the latter place the previous day. At Vedala 80 head of cattle had died of rinderpest locally termed *maunoo* during the past five weeks.

10*th*.—Left Umritsur 6-28 A. M., arrived at Lahore 8-30 A. M.

Lahore. 11*th*.—Made arrangements to proceed to Sheikhoopoora in the Gujranwalla District to-morrow.

12*th*.—Rode to Mundiallee, twelve miles from Lahore.

Sheikhoopoora. D. Gujranwalla. 13*th*.—Rode to Sheikhoopoora, twelve miles. In the evening inspected sick and weakly cattle collected by the Naib Tehsildar of Hafizabad, who had been ordered by the Deputy Commissioner of Gujranwalla to render the Commission assistance.

14*th*.—Rode round Sheikhoopoora to inspect the cattle of the district, as to their general condition, &c. P. M., inspected more sick and weakly cattle and found amongst them two recovering from rinderpest and two suffering from pleuro-pneumonia.

15*th*.—In the morning rode to Kooka (five miles from Sheikhoopoora) and several other villages, and found that rinderpest had, some little time ago, attacked the cattle, also that pleuro-pneumonia was a common disease among them; and recorded evidence. In the evening inspected more sickly cattle which were evidently recovering from starvation, and found one bullock recovering from rinderpest.

16*th*.—This morning held a *post-mortem* examination of a buffalo which had been purchased on account of showing well-marked symptoms of pleuro-pneumonia. The lungs were found extensively diseased, with red and grey hepatization. Recorded evidence of an intelligent Zaildar. Left Sheikhoopoora at 1-30 P. M., and rode into Lahore a distance of twenty-four miles.

17*th August.*—Called on Commissioner and Deputy Commissioner of Lahore and at the Government Secretariat, and saw Mr. Trotter, the Assistant Secretary. Made arrangements for prosecuting inquiries in Lahore and Meean Meer. Lahore.

18*th.*—Had an interview with the Cantonment Magistrate and Commissariat Officer at Meean Meer in the morning, on the subject of murrains and cyst infected meat. At 11 A. M., the Deputy Commissioner and Assistant Commissioner called for the purpose of making arrangements for the Commission to institute inquiries in Lahore.

19*th.*—In the morning inspected the slaughter-houses of Lahore, and found meat extensively cyst infected; specimens of cysts preserved. Afterwards saw some sick cattle in the city, among which were two cases of pleuro-pneumonia. In the afternoon recorded the evidence of the butcher sergeant (a very intelligent man and butcher by trade) on murrains and cyst infected meat; also questioned several natives sent by the Cantonment Magistrate of Meean Meer, but elicited no information from them worth recording.

20*th.*—Inspected (A. M.) more cyst infected lungs and livers obtained by the European Inspector of markets from the slaughter-houses this morning.

At 11 A. M. recorded the evidence of the chowdhry of goallas at the city of Lahore on the late and past outbreaks of murrains in and around the city of Lahore. 8-30 P. M., left Lahore by rail.

21*st.*—Arrived at Montgomery, 4. A. M. Had an interview with Colonel Ferris, Deputy Commissioner of Montgomery. Montgomery.

22*nd.*—Colonel Ferris has made arrangements for the Commission to proceed to-morrow by Checchawutnee to Kumalia.

23*rd.*—The Commission arrived at Checchawutnee by rail by 6 A. M., and proceeded to Kumalia by road, a distance of twelve miles, arriving at 7 P. M. The services of the Naib Tehsildar have been placed at the disposal of the Commission, and he reports the existence of murrain at the village of Shakeboreham. Kumalia.

24*th.*—The Commission rode to Shakeboreham, a distance of five miles, arriving there at 6 A. M., and inspected several cases of rinderpest known in this part of the country by the names of *peer* and *mahta* (*andar ka mahta*—inside smallpox); recorded evidence of past outbreaks. Shakeboreham.

25*th.*—Proceeded at 5 A. M. through the villages of Koha, Man, and Khorooee; recorded evidence of villagers. Held a *post-mortem* examination of a cow which had died of rinderpest the night before. In returning to Kumalia the Commission went to Shakeboreham again, found that one of the buffaloes had died, but unfortunately the carcase had been removed by the chamars. Koha, &c.

26*th.*—Mr. Brandreth, the Commissioner of the Multan Division, *en route* to Jhung, arrived at 8 A. M., and remained with the Commission all day, leaving at 6 P. M. Shakeboreham.

27*th.*—The Commission proceeded at 5 A. M. to Rajana, a distance of eleven miles, arriving at 7-30 A. M. Information was received of murrain existing among the cattle of some people at present living at a place called Bararakeckee, five miles off. At 10 A M. the Commission proceeded to this place, saw three cases of rinderpest and recorded evidence of the people. This village is within the Jhung District on the Bar. Rajana. Bararakeckee. D. Jhung.

28*th.*—Search has been made in several directions on the Bar for other herds of cattle, but as no rain has as yet fallen, the cattle have not been brought to the Bar. Mr. Allsop, Deputy Superintendent of Police, Jhung, arrived at Rajana at 8 A. M. He has kindly offered his services to assist the Commission within the Jhung District, and has brought a letter from the Deputy Commissioner of Jhung, informing the Commission that it is difficult to find any case of murrain at the present time in or near Jhung.

It is resolved under these circumstances that the President and Mirza Ali Jan should return to Kumalia where murrain prevails, and *post-mortem* examinations can be obtained, and that Mr. Charles should proceed to the station of Jhung to inquire relative to past outbreaks and to record evidence.

Kumalia. 29*th August*.—The Commission returned to Kumalia, arriving at 8-30 A. M. 5-30 P. M., visited the village of Vwais, four miles east from Kumalia, and held an examination of the carcase of a bullock which had died that afternoon from rinderpest.

30*th*.—5 A. M. Visited village of Dhalsuree seven miles east of Kumalia, held *post-mortem* examination of a buffalo-cow and recorded evidence. Also at 8-30 A. M. examined the carcase of a buffalo-cow at Kokur, two miles south of Dalsooree. Both proved to be cases of rinderpest.

Cheechawutnee. 31*st*.—The Commission left Kumalia at 4 A. M., and arrived at Cheechawutnee at 7-30 A. M. Mid-day, inspected some camels suffering from debility.

The Commission left Cheechawutnee by rail at 8 A. M.

Lahore. 1*st September*.—The Commission arrived at Lahore 6 A. M., and recorded evidence of four Zemindars of the Gujranwalla District, who had been sent into Lahore by the Deputy Commissioner of Gujranwalla.

The President had an interview with the Assistant Secretary of Government of the Punjab, Mr Trotter, and the Deputy Commissioner, Mr. Moore, and called on the Commissioner.

2*nd*.—Mr. Trotter has promised to supply the Commission with certain papers regarding past outbreaks of murrain in the Punjab. Mr. Charles returned from Jhung this morning, the Commission left Lahore by 5-30 P. M. by rail.

3*rd*.—1 A. M. Arrived at Phillour 7 A. M., left Phillour 1 P. M., arrived at Loodianah 2-30 P. M., left Loodianah at 4-30 P. M.

4*th*.—1 A. M. The Commission arrived at Saharunpore. Resolved that Mr. Charles should proceed to Allahabad to search for papers regarding murrains in the Secretariat of the North-West Provinces, and after completing the search should proceed on to Calcutta.

To economize time, the President is to go by dâk to Kurnaul, and he accordingly proceeded thither at 7 P. M. by palki dâk.

Kurnaul. 5*th*.—Arrived at Kurnaul 2 P. M.

6*th*.—Had an interview with Mr. Thomas, Deputy Commissioner, and was informed that the murrain has disappeared from the neighbourhood of Kurnaul; recorded the evidence of lumbardars.

Saharunpore. 7*th*.—6 A. M. Left Kurnaul. 10 P. M., arrived at Saharunpore.

8*th*.—Had an interview with the Collector, who stated that murrain continues to show itself in some parts of his district.

9*th*.—Left Saharunpore 12-45 night.

10*th*.—Arrived at Allahabad 11-45 P. M.

11*th*.—Sunday.

12*th*.—Left Allahabad 6-30 A. M., arrived at Bankipore 4-30 P. M.

Bankipore. D. Patna. 13*th*.—Had an interview with the Commissioner, Mr. Jenkins, and the Collector, Mr. Mangles, and was informed that rinderpest has of late appeared in the Patna District, to a trifling extent, in a sporadic form. Left Bankipore 4-30 P. M., arrived at Jamalpore 8-30 P. M.

14*th*.—Left Jamalpore 9 P. M.

Calcutta. 15*th*.—Arrived at Calcutta at 9 A. M.

During the absence of the other members of the Commission in the Punjab, Dr. McLeod and Baboo Hem Chunder Kerr visited the following places:—

Dhappa. 9*th July*.—Dhappa municipal platform for disposal of carcases of dead animals; examined one carcase.

Slaughter-houses. 12*th July*.—Kidderpore and Kurriah slaughter-houses; inspected slaughtered carcases.

16*th July*.—Kolingah Street meat bazaar and Dhurrumtollah and Tiretta meat bazaars ; inspected meat. Bazaars.

19*th*.—Cattle market at Dum-Dum; recorded evidence of pykars (dealers), &c. Dum-Dum.

16*th to* 18*th*.—Office.

19*th*.—Office from 11 A. M to 4 P. M. Baboo Hem Chunder Kerr proceeded to Serampore and Hooghly, in consequence of reports having been received of the prevalence of cattle plague in the vicinity of these stations, in order to endeavor to make arrangements for the establishment of a hospital in the Hooghly District, and had an interview with the Magistrate of Hooghly and Assistant Magistrate of Serampore. Information was subsequently received that this object could not be accomplished. Serampore.

20*th to* 27*th*.—Office.

28*th*.—Office from 11 A. M. to 4 P. M. The President called on Dr. Tonnerre, Health Officer, Calcutta, with a view to making arrangements for examining carcases of dead cattle at Dhappa. The subject of an experimental hospital was also discussed, and Dr. Tonnerre placed at the disposal of the Commission the new vacant pig-slaughtering-house at Entally.

29*th to* 2*nd October*.—Office.

3*rd*.—Office from 11 A. M. to 4 P. M. Baboo Hem Chunder Kerr proceeded to Serampore and Khorserai, in consequence of reports having been received of the prevalence of disease there, but found that no disease existed in that neighbourhood.

4*th to* 8*th*.—Engaged in office work. Baboo Hem Chunder Kerr proceeded on the 6th to Mymaree and Gangoorea Police Station in the Burdwan District, in consequence of reports having been received from the Collector of the recent prevalence of rinderpest in that locality, with a view to ascertaining whether a hospital might be advantageously established there. After most careful search and inquiry he ascertained that a sufficient number of cases could not be obtained in that quarter. Mymaree. D. Burdwan.

9*th*.—Proceeded in company with Mr. Bartlett, of the Health Officer's Department, to inspect the pig-slaughtering-house at Entally which was found to be suitable for an experimental hospital.

Inspected the municipal cattle at the Boitakhana sheds.

10*th*.—Office as usual.

11*th*.—Office till 3 P. M. A case of small-pox having been reported to exist at Cossipore, three calves were purchased and inoculated with a view to subjecting them subsequently to the infection of rinderpest in order to test the protective power of variolation. The case was found to be a very mild case of discrete variola. The calves were however inoculated by placing pieces of cotton wool soaked in the lymph obtained from the pustules in small pouches made under the skin of the axilla. Careful thermometrical observations were daily made at 8 A. M. and 4 P. M., and recorded until the 27th October. No symptom of disease appeared except a slight elevation of temperature in one calf on the 14th (103.2° evening) and a still slighter elevation in another on the 14th also (102.2° evening.) One of the calves died on the 27th of congestion of the lungs, and another died on the 7th of November, apparently of the same cause. The other was disposed of. These experiments were a complete failure, and it is probable that the death of the two calves was owing to their being so young and having to be hand-fed. Young calves were selected to prevent the possibility of their having had a previous attack of rinderpest. The morning temperatures taken during 73 days averaged 100·2° and the evening 101·7°. Calcutta.

12*th*.—Office.

Calcutta. 13*th October.*—Office. The President called upon Mr. Greenhill, Veterinary Surgeon of Calcutta, who had seen much of the Calcutta epizootic in 1864 and treated many cases, in order to ask him to give evidence on these subjects, which he readily promised to do.

14*th* & 15*th*.—Office.

16*th*.—Reports having been received of the prevalence of foot and mouth disease on the road between Silligoree and Darjeeling, and that there was a great mortality among the cattle of both the Government and private bullock trains, it was considered necessary that the Commission should proceed to make a local investigation, more particularly as the outbreak had occurred on the hills (7200 feet). Accordingly Messrs. Hallen and Charles and Baboo Hem Chunder Kerr proceeded by mail train 8-32 P. M. *en route* for Darjeeling. Dr. McLeod and Mirza Mahomed Ali Jan remaining in Calcutta to conduct the office work.

17*th*.—Arrived Caragola 11-30 A. M. and Purneah 4-30 P. M.

18*th*.—Arrived Kishengunge 12-30 A M., Silligoree 3-30 P. M.

Kurseong 19*th*.—Left Silligoree 6-30 A. M., arrived Kurseong 12-45 P. M.; afternoon, inspected sick cattle. Inspector Thomas, V. C., of the Darjeeling Police, attended to assist the Commission. Several cases of foot and mouth disease were seen, and the evidence of cattle owners recorded.

20*th*.—6-30 A. M. Inspected sick cattle at various places on the road from Kurseong to Sonada.

Darjeeling. 21*st*.—10-30 A. M. Performed *post-mortem* examination of a bullock which had died of foot and mouth disease at Goomti on the new cart road between Kurseong and Silligoree. P. M., proceeded to Darjeeling.

22*nd*.—11 A. M. Called on the Deputy Commissioner to make arrangements for the inspection of any sick cattle in the neighbourhood, and to have intelligent agriculturists and cattle owners sent to appear before the Commission to give evidence. P. M., recorded the evidence of Tenchung Bootea.

23*rd*.—Sunday. Recorded the evidence of Nurboo, the Sikkim interpreter of the Deputy Commissioner's Court, Darjeeling; Geelong, a native of Sikkim, and Jungpen, a cattle doctor and native of Llassa, Thibet.

Sonada. 24*th*.—A. M. Returned to Sonada. Recorded the evidence of Mr. John White, farmer, and Wally Khan, a chaprassi (messenger) employed by the Darjeeling and Calcutta Carrying Company.

Kurseong. P. M. Proceeded to Kurseong.

25*th*.—Detained at Kurseong by heavy and continued rain.

26*th*.—7 A. M. Left Kurseong, arrived Silligoree 5 P. M.

27*th*.—8 A. M. Left Silligoree, arrived Dingraghaut 8 P. M., but detained on the north bank of the Mahanuddee all night.

Purneah. 28*th*.—Arrived Purneah, 11 A. M. Had an interview with the Collector to inquire if murrain is prevailing at the present time in the neighbourhood of Purneah with a view to establishing a hospital in that district. In consequence of this, the Collector caused careful inquiries to be made, and the result was afterwards communicated, *viz.*, that although rinderpest did prevail to a small extent in some villages of the district, a sufficient number of cases could not be obtained on any one spot to warrant the placing of a hospital for treatment there. Arrived at Caragola at 11 P. M.

29*th*.—Left Caragola 7 A. M., arrived Sahebgunge 11-30 A. M., left at 12 o'clock night.

30*th October*.—Sunday. Arrived Calcutta 9 A. M. Calcutta.

31*st*.—Office.

1*st & 2nd November*.—Office closed. Holiday.

3*rd*.—Office.

4*th*—Six A. M., Mr. Hallen and Baboo Hem Chunder Kerr proceeded to Diamond Harbour. Diamond Harbour where disease had raged so violently in 1868, and whence reports of a slight prevalence of *bosonto* were still being received, in order to record evidence as to the past outbreak, and ascertain whether sufficient cases for the establishment of a hospital might be found there.

Recorded evidence during the day.

P. M. Visited the village of Parulia and inspected two cases of rinderpest, not of a severe type and evidently recovering. The Deputy Magistrate has been requested to obtain further information from different portions of the sub-division.

5*th*.—Returned to Calcutta.

6*th*.—Sunday.

7*th to* 10*th*.—Office.

11*th*.—Office. Proceeded at 3 P. M. to the municipal platform at Dhappa and inspected three carcases there, none of them showed any indication of these animals having died of rinderpest.

12*th*.—Office.

13*th*.—Sunday.

14*th*.—7 to 11 A. M. The Commission visited the oilmen's sheds at Manicktollah and recorded evidence on the subject of rinderpest which annually visits there. Office from 12 to 4 P. M.

15*th*.—Visited the Sukeea's Street cattlesheds from 7 to 10 A. M. Inspected sheds and cattle and recorded evidence. Rinderpest is of yearly occurrence in these sheds. Office from 11 to 4 P. M. Recorded the evidence of Rajah Narendra Krishna.

Mr. John Stalkartt called and expressed his willingness, in reply to a letter, asking him to impart information regarding agricultural stock of this country, and their diseases, to do so.

16*th*.—Office. Recorded the evidence of Baboo Degumber Mitter, a large landed proprietor and member of the Bengal Legislative Council. Baboo Hem Chunder Kerr proceeded again to Diamond Harbour in order to make more particular inquiry regarding the cattle disease, which, from the Deputy Magistrate's report, evidently exists.

17*th to* 19*th*.—Office.

20*th*.—Sunday.

21*st*.—Office 11 to 5. Mr. John Stalkartt of Goosery attended and gave evidence which was duly recorded.

22*nd*.—Office. Baboo Hem Chunder Kerr returned. He had visited about 100 villages around Diamond Harbour and found that though scattered cases of rinderpest were to be found, the disease was not so prevalent or concentrated as to furnish a sufficient number of cases for hospital purposes.

23*rd to* 26*th*.—Office.

27*th*.—Sunday.

Bood-Bood.

28*th November*.—Office. Baboo Hem Chunder Kerr proceeded to Bood-Bood, whence reports of disease had been recently received, from several quarters, to institute inquiries as to the propriety of establishing a hospital there.

29*th* & 30*th*.—Office.

1*st December*.—Office.

2*nd*.—Office. Baboo Hem Chunder Kerr returned from Bood-Bood. He found from personal inquiry, that rinderpest existed to a greater or less extent in some of the villages where it was reported to exist. In one village, Warishpoor, twelve miles from Bood-Bood, 90 cattle had died during the preceding eight months of rinderpest, but at the time of his visit, only two or three mild cases were to be seen. The result of his inquiry and inspection was that a sufficient number of cases could not be found at Bood-Bood or its neighbourhood to warrant the establishing of a hospital for treatment. Baboo Hem Chunder Kerr ascertained at the Office of the District Superintendent of Police, Burdwan, that murrain existed at Culna in that district.

3*rd*.—Office. A hospital has been erected at Momenpore for the inoculation of cows and goats with virus derived from a pustular eruption observed upon the udder of a goat purchased for private use by Mr. Hallen.

4*th*.—Sunday. Hospital morning and evening.

5*th*.—Hospital morning and evening. Two young cows and two goats have been inoculated from the exanthem in question; another she-goat having taken the disease in consequence of having been milked by the same person, who milked the original case. Office at the usual hours. Baboo Hem Chunder Kerr proceeded to Culna in order to make a personal inquiry, and ascertain whether a hospital for treatment and experiment can be advantageously established there.

6*th*.—Office. The evidence of Lieutenant W. Pritchard and Mr. Dobson, Deputy Superintendent of the Alipore Jail, was recorded.

7*th*.—Office.

8*th*.—Baboo Hem Chunder Kerr reports from Culna that he finds rinderpest prevailing, and suggests that Mr. Hallen should proceed thither to judge of the advisability of establishing a hospital. He expresses a belief that the owners of sick cattle will readily submit them for treatment.

9*th*.—Office. Mr. Hallen personally reported to the Military Secretary to the Viceroy his intention to proceed to Culna.

10*th*.—Office furniture and tent despatched to Culna.

Culna.

11*th*.—Sunday. Mr. Hallen proceeded to Culna, and had an interview with the Officiating Joint Magistrate Mr. Beighton.

12*th*.—Mr. Hallen and Baboo Hem Chunder Kerr inspected ten sick cattle affected with rinderpest, and from personal conversation with the *goallas*, milkmen, and owners of agricultural stock, found that there is every hope of many cases being obtained for trial of different methods of curative treatment. Baboo Sreegopaul Paul Chowdhry has placed at the disposal of the Commission, free of rent, premises consisting of a house with compound and out-houses in the town of Culna for use as a hospital. These premises are very suitable for the purpose. The larger house will afford room for 23 patients, and sheds can be erected in the compound for 27 more, thus permitting of 50 patients being housed for treatment. The out-houses afford excellent accommodation for the Veterinary Assistant and attendants and for a dispensary. Ten patients have been already collected in this yard, and after being carefully examined by Mr. Hallen are found to be cases of rinderpest.

13*th December*.—The hospital is being prepared for the convenient reception and treatment of cattle.

14*th*.—Information has been received of the existence of rinderpest in some little villages adjoining Culna. Having heard that in one village, Serampoor, cattle owners expressed a suspicion of the motives for which a hospital was organized, Mr. Hallen and Baboo Hem Chunder Kerr proceeded thither, and carefully explained the objects and intentions of Government in establishing this inquiry, namely, to endeavor to diminish the losses sustained by ryots owing to the death of cattle. They were so far convinced and re-assured that they sent five cattle to hospital at once. Culna.

15*th*.—Twenty cases of rinderpest have been admitted for treatment.

16*th*.—Government Resolution No. 5537 of this date has been received, intimating that the Civil Members of the Commission are to revert to their substantive appointments on the 1st proximo, and the Medical Members to continue treating cattle in hospital, making the necessary experiments, and drawing up the report until the 1st of February.

The services of Baboo Hem Chunder Kerr have been found so valuable in furthering the objects of the hospital that Mr. Hallen has addressed Government with the view of retaining them as long as the hospital lasts—a proposal which has been sanctioned. Dr. McLeod remains in Calcutta in charge of the office, preparing matter for printing, and generally expediting the completion and issue of the report and its appendices. Dr. McLeod will visit Culna from time to time in order to enable him to form a judgment, from personal observation, upon the operations carried on in the hospital. The general principles of the report have been discussed and agreed upon by the Members, subject to any modification which the hospital experience may render necessary, and the detailed report will, on completion, be submitted for the approval and signature of all the Members of the Commission.

The following are the forms (Nos. 1 and 4) which have been used to elicit written information of a more general or detailed description:—

FORM No. 1.

QUESTIONS.

1. Name of District, Talook or Mouzah and Village?
2. Name of Disease in Vernacular or English?
3. Date of outbreak of disease?
4. Number of cattle attacked?
5. Number of cattle which have died?
6. Number of cattle which have recovered?
7. Number of cattle still ill?
8. Number of cattle belonging to the Village?
9. Whether the disease is supposed to be infectious or not?
10. How supposed to have originated?
11. Symptoms of the disease, informing on the following points:—
    Appearance of the coat?
    Whether there are any eruptions on the body or feet, or not?
    Eyes and mouth watering or not?
    Body cold or hot?
    Cough or labored breathing?
    Shivering fits or not?
    Swelling of the throat, or any difficulty in breathing?
    Appearance of urinary or fæcal evacuations?
12. Average duration of attack before recovery or death?
13. As to whether any preventive or remedial measures have been used or not, and with any success or not?

FORM No. 4.

QUESTIONS.

1. Name of locality?
   Area in beegahs, acres or miles?
   Geography and nature of soil?
2. Number of cattle in the locality, and number to square mile?
3. Different breeds of cattle in the locality?
   Average value of cattle per head?
   Now and 10 years ago?
4. Uses for which cattle are employed?
   I.—Agriculture, how and when?
   Bullocks or cows employed?
   II.—Draught and burden?
   Treatment of cattle so employed.
   III.—Dairy?
   Proportion used for each purpose?
5. Mode of housing?
   Kind of cattle sheds when used?
6. Mode of feeding and watering?
   Particular kinds of grass and fodder?
   Native names and specimens if possible?
   Water whence obtained?
7. Whether herded by day or night, or at any seasons?
   Particulars requested?
8. Whether cattle are herded and driven for pasture to other districts?
   If so, whither and to what distance?
9. General condition of cattle?
10. Stock how kept up?
    I.—By breeding?
    Special bulls kept?
    II.—By importation?
    Whence?
    Average price paid?
11. Mode in which cattle are bought and sold?
    Hâts, markets, &c.?
12. Export of cattle, if any, whither, and for what purpose?
13. Export of hides?
    Number of dealers, whether increased of late or not?
    Price of hides now and ten years ago?
    How hide trade is conducted?
14. Mortality among cattle, ordinary and from plague?
15. History of plagues?
    In what years they occurred?
16. Character of plagues, source, cause, mode of spread, &c.?
17. Season in which plagues prevail?
18. Whether different varieties are apt to prevail at different seasons?
    Duration of such outbreak?
19. Statistics of cattle plague?
    Proportion per cent. of attacked?
    Proportion per cent. of recoveries?
    Proportion per cent. of deaths?
20. Kind of cattle most liable to attack with regard to
    Breeds,
    Age,
    Sex, and
    Condition?
21. Symptoms?
    Shivering?
    Appetite and rumination?
    Skin, temperature, hair, eruption, &c.?
    Swelling of tongue and throat?
    Difficulty in breathing, cough, &c.?
    Looseness of bowels; blood or mucus?
    Secretion of milk suppressed or altered?
    Posture of animals?
22. If body examined after death, what appearances?
23. Opinion of reporter as to contagiousness of different varieties of cattle plague?
24. Treatment of cattle diseases?
    Effects of different methods?
25. Sanitary measures, if any, adopted?
    Disinfection?
    Separation of sick and healthy?
    Burial of carcases?
26. Hides, horns and hoofs of diseased cattle how disposed of?
27. Prevalence of disease among other animals during cattle plague?
28. Affection of man by disease prevailing among cattle?
29. Disease at present prevailing?
    Particulars?
30. Effects of weather and heavy falls of rain?
31. Any other remarks on points not abovementioned?

APPENDIX No. II.

CONTAINING

GENERAL INFORMATION, REPORTS FROM DISTRICT OFFICERS, AND EVIDENCE AND OBSERVATIONS RECORDED BY THE CATTLE PLAGUE COMMISSION,

ARRANGED UNDER

PRESIDENCIES, PROVINCES, DIVISIONS AND DISTRICTS.

BENGAL PRESIDENCY:

PROVINCE OF BENGAL, BEHAR AND ORISSA.

PRESIDENCY DIVISION,

COMPRISING THE DISTRICTS OF 24-PERGUNNAHS, NUDDEA, AND JESSORE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
24-Pergunnahs.	Historical sketch ...	...	.....	*p.* 37.
	Dr. Duncan Stewart ...	...	Calcutta, 1844 ...	Report on small-pox, Part II, pages 84-132, p. 41.
	A. Blechynden, Esq. ...	...	1*st February* 1864 ...	*Selections, Bengal Govt., p.* 7.
	John Stalkartt, Esq. ...	...	3*rd February* 1864 ...	*Ditto ditto p.* 32.
	R. Rutherford, Esq. ...	...	1*st February* 1864 ...	*Ditto diito p.* 33.
	Dr. C. Palmer (Report on Calcutta epizootic.)	...	7*th October* 1865 ...	*Ditto ditto p.* 74-104.
	Baboo Kalee Churn Ghose, Deputy Magistrate of Satkheera.	40	3*rd October* 1866 ...	*Ditto ditto p.* 134.
	Hon'ble A. Eden ...	808	21st June 1869 ...	Supplement, *Calcutta Gazette.* These papers refer to a severe outbreak of murrain in Diamond Harbour Sub-division during the year 1868, p. 52.
	Rivers Thompson, Esq., Commr., Presy. Divn. ...	144	14th May 1869 ...	
	Baboo H. C. Kerr, Deputy Magistrate.			
	A. Smith, Esq., Magistrate of 24-Pergunnahs.	162	20th April 1869 ...	
	H. Farrell, Esq., V. S. ...	...	No date ...	
	Ditto ditto ...	...	20th March 1869 ...	
	Baboo H. C. Kerr ...	1	14th April 1869 ...	
	A. Smith, Esq. ...	183	7th May 1869 ..	
	Baboo H. C. Kerr ...	..	3rd May 1869 ...	
	E. J. Barton, Esq., Offg. Magistrate of 24-Pergunnahs.	96	25th February 1870 ..	These papers refer to the prevalence of cattle disease during 1869, p. 63.
	E. Verner, Esq., for ditto...	111	8th March 1870 ...	
	A. R. Thompson, Esq., Officiating Commissione, Presidency Division.	18	3rd March 1869 ..	
	Ditto ditto ...	206	14th June 1869 ...	
	E. J. Barton, Esq., Offg. Magistrate, 24-Pergunnahs.	97	26*th February* 1870 ...	*Tabular Statements exhibiting the prevalence of cattle disease in the Diamond Harbour Sub-division—summarised in Appendix No.* 3.
	H. Cockerell, Esq., Officiating Commissioner, Presidency Division.	39	12*th March* 1870 ...	

Index of records.

District.	From whom received.	Number.	Date.	Reference and Purport.	
24-Pergunnahs,—*contd.*	*A. Smith, Esq., Magistrate, 24-Pergunnahs.*	180	*22nd April* 1870 ...		
	Ditto ditto ...	181	*22nd April* 1870 ...		
	Ditto ditto ...	208	*4th May* 1870 ...		
	Ditto ditto ...	221	*10th May* 1870 ...	*Tabular Statement exhibiting the prevalence of cattle disease in the Diamond Harbour Sub-division—summarised in Appendix No. 3.*	
	Ditto ditto ...	123	*12th May* 1870 ...		
	Ditto ditto ...	232	*20th May* 1870 ...		
	Ditto ditto ...	241	*30th May* 1870 ...		
	Ditto ditto ...	258	*8th June* 1870 ...		
	Ditto ditto ...	266	*13th June* 1870 ...		
	Ditto ditto ...	282	*22nd June* 1870 ...		
	Offg. Magistrate of Alipore	366	*17th August* 1870 ...		
	Ditto ditto ...	374	*22nd August* 1870 ...		
	Ditto ditto ..	392	*27th August* 1870 ...		
	A. Smith, Esq, Magistrate of 24-Pergunnahs.	249	*31st May* 1870 ...	*Tabular Statement exhibiting the prevalence of cattle disease in the Satkheera Sub-division, Appendix No. 3.*	
	Ditto ditto ...	264	*11th June* „ ...		
	Ditto ditto ...	353	*22nd June* „ ...		
	A. Smith, Esq., Magistrate of 24-Pergunnahs.	131	*17th May* 1870 ...		
	Ditto ditto ...	270	*16th June* „ ...	*Tabular Statement exhibiting the prevalence of cattle disease in the Barasat Sub-division, Appendix No. 3.*	
	Ditto ditto ...	283	*22nd June* „ ...		
	Ditto ditto ...	292	*29th June* „ ...		
	Ditto ditto ..	314	*9th July* „ ...		
	Ditto ditto ...	321	*15th July* „ ...		
	Ditto ditto ...	282	*25th July* „ ..		
	Baboo Rakhaldas Mookerjee, Deputy Magistrate, Diamond Harbour.	*D. O.*	*8th November* 1870...	*Reporting on disease in Diamond Harbour.*	
	Ditto ditto ...	„	*10th November* „ ...	*Ditto ditto.*	
	Visit to Wooltadangah market.	...	5th April 1870 ...	Evidence and observations recorded by the Cattle Plague Commission at the Presidency.	... ... p. 64.
	Ditto Kidderpore market	...	6th April „ ...		... ... p. 64.
	Ditto Dum-Dum market	...	19th July „ ...		... ... p. 65.
	Ditto Tengra slaughter-house.	...	22nd December 1869		... ... p. 66.
	Ditto Kidderpore ...	...	12th July 1870 ...		... ... p. 66.
	Ditto Meat Bazaars ...	...	10th „ „ ...		.. ... p. 67.
	Ditto Dhappa ...	...	9th July and 10th November 1870		... ... p. 67.
	Evidence of Mr. Dissent ...	...	7th April 1870		... ... p. 69.
	Visit to the byres at Manicktolah.	...	Ditto ...		... ... p. 70.
	Ditto Oilmen's sheds, Manicktolah.	...	14th November 1870		... ... p. 72.
	Ditto Sukhea Street Byres.	...	Ditto ...		... ... p. 73.
	Ditto Balaram Dey's Street Byres.	...	15th November „ ...		... ... p. 74.
	Evidence of Mr. J. L. Taylor, Superintendent, Municipal Gowkhanah, Kurreah.	...	1st March „ ...		... ... p. 75.
	Evidence of Mr. R. Harvey, Superintendent of Municipal Gowkhanah, Boitakhana.	...	4th April „ ...		... ... p. 77.
	Evidence of Mr. John Stalkartt.	...	21st November „ ...		... .. p. 78.
	Ditto Rajah Narendra Krishna.	...	15th do. „ ...		... ... p. 79.
	Ditto Baboo Degumber Mitter.	...	16th do. „ ...		... ... p. 81.

District.	From whom received.	Number.	Date.	Reference and Purport.	
24-Pergunnahs,—*contd.*	Evidence of Mr. R. Sheriff, Zemindaree manager of the Port Canning Co.	..	22nd December 1869	Evidence and observations recorded by the Cattle Plague Commission at the Presidency. ... ... p. 82.	Index of records.
	Visit to Diamond Harbour and neighbourhood.	...	4th November 1870	... ... p. 84.	
	Evidence of inhabitants of Culpee, recorded by Baboo Rakhaldas Mookerjee, Deputy Magistrate of Diamond Harbour.	...	10th November 1870	... ... p. 86.	
	Evidence of Baboo Sumboo Chunder Ghose.	...	20th November 1870	... ... p. 89.	
	Evidence of J. H. Dobson, Esq., Deputy Superintendent of Alipore Jail.	...	6th December 1870	... ... p. 90.	
	Evidence of Lieutenant W. Pritchard, R. A., Deputy Commissary General, Calcutta.		6th December 1870	... ... p. 91.	
	Evidence of Combar Ali, Government Meat Agent.	...	8th December 1870	... ... p. 92.	
	Evidence of W. C. Hannah, Esq., Hide Broker, Calcutta.	...	5th December 1870	... ... p. 93.	
Nuddea.	*H. L. Dampier, Esq., Commissioner, Presidency Division.*	8 *C T*	9*th March* 1864 ...	*Selections, Government of Bengal, p.* 45. *Stating that "Bussunto" is well known in the district, and discussing treatment.*	
	H. L. Dampier, Esq., Commissioner, Presidency Division.	192	30*th October* 1866 ...	*Selections, Government of Bengal, p.* 31. *Giving symptoms of "Puschima Rog."*	
	R. B. Chapman, Esq., Officiating Commissioner, Presidency Division.	122	21*st May* 1867 ...	*Ditto ditto, p.* 148.	
	R. B. Chapman, Esq., Officiating Commissioner, Presidency Division.	99 *N*	20*th December* 1867 ...	*Selections, Government of Bengal, p.* 323. *Reporting outbreak of cattle murrain and giving some particulars.*	
	H. Bell, Esq., Collector, Nuddea.	7 *C T*	10*th December* 1867 ...		
	Ditto Ditto ...	28 *C T*	18*th December* 1867 ...		
	K. McLeod, Esq., M. D. ...	725	12*th December* 1867 ..		
	J. Munro, Esq., Magistrate of Nuddea.	309	1*st February* 1870...	*Reporting outbreak of cattle disease in Chooadangah Sub-division.*	
	H. J. S. Cotton, Esq., Assistant Magistrate, Chooadangah.	...	8th February 1870...	Statement of cattle disease from Kaloopole Police Station. Appendix No. 3.	
	J. Munro, Esq., Magistrate of Nuddea.	539	18th ditto ...	Reports extensive outbreak of cattle disease in Sub-division Chooadangah, p. 94.	
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	83	ditto ...		
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	ditto ...	Statement of cattle disease from Chooadangah Police Station. Appendix No. 3.	
	Ditto ditto ...	...	19th ditto ...	Statement of cattle disease from Damoorhoodah Police Station. Appendix No. 3.	

Index of records.

District.	From whom received.	Number.	Date.	Reference and Purport.
Nuddea,—*continued.*	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	2nd March 1870 ...	Statement of cattle disease from Jeeboonuggur Police Station. Appendix No. 3.
	C. C. Stevens, Esq., Magistrate, Nuddea.	644	1st ditto ...	A further careful report of cattle disease in Sub-division Chooadangah, p. 94.
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	102	27th February 1870...	
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	19th ditto ...	Statement of cattle disease from Damoorhoodah Police Station. Appendix No. 3.
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	...	8th March 1870 ...	Statement of cattle disease from Alumdangah Police Station. Appendix No. 3.
	Baboo Ram Sunker Sein, Deputy Magistrate, Ranaghat.	173	5th ditto ...	Reports of cattle disease which prevailed at Ranaghat, p 96.
	Baboo Ram Sunker Sein, Deputy Magistrate, Ranaghat.	277	*29th March* 1870 ...	*Reports outbreak of cow-pox in Ranaghat.*
	C. C. Stevens, Esq., Magistrate of Nuddea.	682	*3rd ditto* ...	*Reports outbreak of cattle disease in village Dekee, Thannah Sarsa.*
	Baboo Ram Sunker Sein, Deputy Magte., Ranaghat.	266	*26th March* 1870 ...	*Reports on Bussunto in Ruthdengapara, Ranaghat.*
	Evidence of the inhabitants of Dowlutdear.	...	5th ditto ...	These papers contain all the evidence taken by the Cattle Plague Commission at Chooadangah, and information collected during personal visits to villages, &c. ... ... p. 97.
	Ditto of Chooadangah Moochies.	...	19th ditto ...	... ... p. 98.
	Ditto of Godie Joardar	...	21st ditto ...	... .. p. 100.
	Ditto of Assan Mondul	...	22nd ditto ...	... ... p. 101.
	Ditto of Chund Biswas	...	ditto ...	... ... p. 101.
	Ditto of Modhib-ooddeen Joardar.	...	ditto ...	... .. p. 102.
	Ditto of W. Shirreff, Esq.	...	23rd ditto ...	.. ... p. 103.
	Ditto of A. Hills, Esq.	...	ditto ...	... ... p. 104.
	Ditto of Ryots of Koolchara.	...	ditto ..	... ... p. 104.
	Ditto of Issur Ghose...	...	24th ditto ...	... .. p. 105.
	Ditto of H. J. S. Cotton, Esq.	...	25th ditto ...	... ... p. 105.
	The evidence of the villagers of Tengramaree.	...	7th ditto ...	... ... p. 107.
	Ditto ditto of Belgachee.	...	8th ditto ...	... ... p. 108.
	Ditto ditto of Taltollah.	...	9th ditto ...	... .. p. 110.
	Ditto ditto of Puddo bela Hât.	...	ditto ...	... ... p. 111.
	Ditto ditto of Noonnugger.	...	10th ditto ...	... ... p. 111.
	Ditto ditto of Katchakatta.	...	11th ditto ...	... ... p. 112.
	Ditto ditto of Sindooree.	...	... ...	... ... p. 113.
	Ditto ditto of Hathikatta.	...	22nd ditto ...	... ... p. 114.
	Ditto ditto of Alukdia.	...	23rd ditto ...	... ... p. 115.
	Ditto ditto of Lokenathpoor.	...	25th ditto ...	... ... p. 117.

District.	From whom received.	Number.	Date.	Reference and Purport.
Nuddea,—*cond.*	*C. C. Stevens, Esq., Magistrate of Nuddea.*	2497	15*th July* 1870 ...	*Informs that at present there is no rinderpest in the district.* Index of records.
	C. C. Stevens, Esq., Magistrate of Nuddea.	2742	4*th August* 1870 ...	*Reports a limited outbreak of cattle disease (small-pox) in the Kooshtea Sub-division.*
	C. C. Stevens, Esq., Magistrate of Nuddea.	2929	26*th August* 1870 ...	*Reports that there has been no cattle disease since March* 1870.
	H. Johnson, Esq., Joint Magistrate of Kooshtea.	747	12*th October* 1870 ...	*Reports that no cattle disease exists in his Sub-division.*
	H. Johnson, Esq., Assistant Magistrate of Kooshtea.	807	8*th November* 1870 ...	*Reports that some cattle sickness exists, but not in an epizootic form.*
	H. J. S. Cotton, Esq., Assistant Magistrate of Chooadangah.	521	17*th November* 1870	*Sub-division generally free from disease; a few cases of bussunto in some villages. Puschima occurred a short time ago.*
Jessore.	*H. L. Dampier, Esq., Commissioner of Presidency Division.*	8 *C. T.*	9*th March* 1864 ...	*Selections, Government of Bengal, p.* 45. *Reports that cattle disease is well known in the district.*
	H. L. Dampier, Esq., Commissioner of Presidency Division.	192	30*th October* 1866 ...	*Selections, Government of Bengal, P.* 131. *Reports prevalence of cattle disease in Jhenidah Sub-division.*
	R. B. Chapman, Esq., Commissioner of Presidency Division.	218	5*th August* 1870 ...	*Selections, Government of Bengal, p.* 151. *A careful report of the symptoms and post mortem appearance of cattle disease in Khoolnah Sub-division.*
	J. Munro, Esq., Officiating Magistrate of Jessore.	465	20*th July* 1867 ...	
	K. McLeod, Esq., M. D., *Civil Assistant Surgeon, Jessore.*	443	20*th July* 1867 ...	
	H. A. Cockerell, Esq., Officiating Commissioner, Presidency Division.	319	23rd November 1869	Supplement, *Calcutta Gazette*, December 15th, 1869. A detailed report of the widespread prevalence of *gootee*. An earlier report, dated 30th June 1869, p. 118, was forwarded by Mr. Farrell and sent on to Government by R. Thompson, Esq., Commissioner, Presidency Division, under his docket No. 21 P., Calcutta, 22nd July 1869.
	J. Westland, Esq., Officiating Magistrate, Jessore.	169	12th November 1869	
	H. Farrell, Esq., Veterinary Surgeon.	...	20th October 1869 ...	
	J. Westland, Esq., Magistrate, Jessore.	E 150	19th February 1870	A report on cattle poisoning with remarks upon it by the Magistrate of the district. Appendix No. 4.
	H. Farrell, Esq., V. S. ...	...	12th September 1869	
	E. J. Barton, Esq., Magistrate, Jessore.	G 137	18th September 1869	
	J. Westland, Esq., Magistrate of Jessore.	*E* 258	2*nd March* 1870 ...	*Reports cattle disease in Kessubpore Station, 7 villages.*

Index of records.

District.	From whom received.	Number.	Date.	Reference and Purport.
Jessore,—*continued.*	*E. J. Barton, Esq., Magistrate of Jessore.*	*G* 365	28*th March* 1870 ...	*Reports cattle disease in Boroledaha village.*
	Ditto ditto ...	*E* 737	11*th June* 1870 ...	*Form No.* 1. *Reports outbreak of cattle plague in Sudder Sub-division.*
	H. R. Rainey, Esq., Zemindar, Khoolna.	...	3rd May 1870. ...	Forwards form No. 4 carefully filled up, p. 125.
	E. J. Barton, Esq., Officiating Magistrate of Jessore.	119 *E*	8*th August* 1870 ...	*Reports extensive prevalence of cattle disease Puschima in the Bagirhaut Sub-division.*

HISTORICAL SKETCH.

Historical sketch.

Cattle murrain attracted the attention of professional men more early and more strongly in Calcutta than elsewhere in Bengal, and though records and recollection do not extend its history back beyond one century, still we have in the work of Dr. Duncan Stewart, Superintendent General of Vaccination, "On Small-pox in Calcutta," published in the year 1844, a chapter on "the disease among cows," which contains a most valuable and systematic description of murrain, then as now breaking out in the dairies of Calcutta every year or two, and sweeping off numbers of dairy stock. The circumstances of Dr. Stewart's inquiry have been repeated all over Bengal. Whenever attention has been directed to the diseases of horned stock, murrain has been *found* carrying off hundreds of cattle, or has been ascertained to have recently done so, and the natives have with one voice declared that this is nothing new—has been told them by their fathers and grandfathers—has indeed become such a feature of rural life that it occasions neither surprise nor complaint. Wherever the Cattle Plague Commission has gone in the prosecution of these inquiries, this experience has been faithfully reproduced, until the general belief has grown strong, without reasonable doubt, that over the length and breadth of Bengal cattle murrain has *always* prevailed as it now prevails, quietly stealing from village to village, killing cattle by scores in each, and in some seasons of exceptional insalubrity—a drought, a flood, or a cyclone—producing such wholesale havoc and death that agricultural industry is for the time paralysed, and it needs a season or two of prosperity to repair the damage. As Dr. Stewart's work is not readily accessible, all that relates to murrain has been reprinted in this appendix (page 41). The primary object of his investigation was to find a case of natural cow-pox for the purpose of obtaining an indigenous source of supply of vaccine lymph. This same object led to the discovery and description of cattle disease in Hooghly, Moorshedabad, Sylhet, Saugor, and elsewhere, but the subject of the discovered disease was not in any other case so carefully followed up for its own sake as by Dr. Stewart. This gentleman with an admirable scientific instinct originated a very complete inquiry. He visited the Calcutta byres and personally studied the symptoms and pathology of the disease; he carefully questioned those most likely to know, as to the history and features of the plague, and had a searching inspection of the Calcutta slaughter-houses and meat markets made. The results of these steps will be found in the extract.

1795-96.

The earliest recorded date of any particular murrain is 1795. In that and the following year, according to Mr. Blacquiere, one of Dr. Stewart's informants, a great mortality occurred among men and cattle in the months of January and February. Another informant, Mr. John Teil, a hide merchant and tanner, was familiar with the disease *Matah*, and wrote of its general prevalence in spring. In 1836 Mr. H. Piddington,

1828-36.

whose name and repute as a careful and correct observer are so well known in connection with the subject of cyclones, wrote in the transactions of the Agricultural and Horticultural Society (Vol. III, page 126) an account of "the *bosonto* which attacks the cattle of Bengal." He surmises that the disease is a species of dysentery; states that his own cattle were attacked three or four times in the course of seven or eight years, gives a slight sketch of the symptoms, and details a method of treatment (fumigation with muriatic acid fumes) which he recommends with confidence.

1843-44.

This interesting paper leaves no doubt as to the identity of the disease or its frequent prevalence. The outbreak of 1843-44 was a very severe one. It commenced in September 1843 and lasted till June 1844, attaining a maximum in January. The table at page 42 of this appendix shows the very remarkable parallel which obtained between this epizootic and the epidemic small-pox which simultaneously prevailed. The recorded mortality is 2,233. Dr. Stewart's description of the symptoms of

Historical sketch.

Matah leaves no doubt that the disease was rinderpest. His attempts to discover natural vaccinia, perseveringly carried on for 15 years, were a complete failure, and he was equally unsuccessful in his endeavours to variolate cows, and by this means to obtain an Indian source of lymph protective against small-pox. It is remarkable that though the variolation of cows has been tried over and over again in India, no satisfactory results have ever been obtained.

The subject of cattle murrain at the Presidency is now lost sight of until 1864, when two circumstances aroused fresh interest in it. The first was a communication from the Government of Madras, regarding cattle disease which prevailed in Kurnool in 1863, drawing attention to the subject and asking for information. The second and most effective cause of renewed attention was the breaking out of murrain at the Exhibition held under the auspices of the late Lieutenant Governor of Bengal, Sir Cecil Beadon, at Belvidere in 1864. Then, as in 1844, inquiry revealed the frequent prevalence of epizootics, but the inquiry was now conducted on a more extensive scale, and embraced the whole of Lower Bengal, in each *district and division* of which murrain was found to be a subject familiar to the people and a frequent visitant. The interest in the matter spread from Madras to Bombay and Burmah, and from Bengal to the North-Western Provinces, Oudh, and the Punjab, and more recently to the Central Provinces, the result everywhere being the same. Still later the English cattle-plague and the identification of the Indian plague with rinderpest, which was made by Dr. Murchison at Home and by Dr. Palmer and others in India, kept this interest alive; the appointment of the Cattle-Plague Commission still further stimulated inquiry, and facts have latterly been pouring in from all parts of the country. This will explain the peculiarity observable in all these sketches of the history of the disease, and in the maps, namely, that cattle murrain has been apparently more prevalent and virulent during later than earlier years.

1857. 1861-62-63.

As regards Calcutta, it was ascertained that in 1861 "gootee" prevailed so violently among the municipal cattle that the services of a Veterinary Surgeon were considered necessary, and that in 1862 and 1863 frequent outbreaks occurred in its neighbourhood. The outbreaks recorded were those which happened among the cattle of gentlemen and men of substance, who bred stock for pleasure or fancy, but the deaths which must have been taking place among the cattle of ryots and goallas were not brought to light. The evidence of Mr. Taylor (page 75) shows that as early as 1857 the cattle of the Municipality were severely attacked by "gootee," which has since then prevailed among them almost yearly.

1864.

Dr. C. Palmer was now appointed by the Government of Bengal to report on the whole subject, and this officer has given us a most valuable description of the disease as observed by himself and the Veterinary Surgeons of Calcutta, more particularly Messrs. Greenhill and Rutherford at the Exhibition, and a valuable summary of the observations of district officers throughout Bengal. He showed to demonstration that the "Calcutta epizootic" was nothing other than rinderpest, but was in error in supposing that the "gootee" or "matah" reported from the districts was "epizootic aphtha"—foot and mouth disease.

This report has been printed in a volume of selections of "papers relating to cattle disease," which has been extensively circulated (pages 74-104).

As regards the other districts of the Presidency Division, the Commissioner, Mr. Dampier, states generally that "the cattle murrain described by Captain Nelson (Kurnool, Madras) appears to be well known in this division," and this statement is abundantly supported by the reports of district officials in Nuddea and Jessore and their sub-divisions. The oral testimony of the people, communicated to the Commission, and of district officials, leaves no doubt as to the frequent prevalence of *bosonto* or rinderpest, *puschima*, which is applied to

severe forms of rinderpest and to hoven—a disease arising from eating unwholesome food, as well as *khurah*, or foot and mouth disease. Historical sketch.

1865-66. The next murrain which attracted any notice in this division was in the Satkeera sub-division of the 24-Pergunnahs district, in the cold weather of 1865. This murrain was *bosonto*, and continued to prevail in 1866. In March and April of this year, this disease is said to have caused great devastation among the cattle of several villages adjoining the Soonderbuns. The same form of disease (rinderpest) prevailed in Jenidah and Bagirhaut, sub-divisions of the Jessore district. In the latter the loss of cattle was estimated at 1,200 head, and pigs, deer, and buffaloes died in great numbers during, and apparently of, the murrain.

1867. The plague continued to prevail in Jessore in 1867, and in July of that year Dr. K. McLeod, then Civil Surgeon of the district, personally investigated it in the sub-division of Khoolna. It was found to be committing considerable havoc among the cattle of the agriculturists, and the description of the symptoms and *post-mortem* appearances leaves no doubt that the disease was rinderpest. This year was signalized in these parts by an unusually high inundation, and on its subsidence a virulent murrain broke out in the district of Nuddea. A swelling of the throat and neck, and wasting, are noted by the Collector, Mr. H. Bell, as the most prominent symptoms of the disease, which appears to have been owing to the cattle eating submerged grass; but in the absence of a description by a skilled observer, it is difficult to pronounce decidedly on the type of this disease. It appears to have subsided towards the close of the year.

1868. In 1868 a very serious and severe outbreak of rinderpest occurred in the Diamond Harbour sub-division of the 24-Pergunnahs district. This murrain has been carefully described by Baboo Hem Chunder Kerr, Deputy Collector, who was during that time in charge of the sub-division, and by Mr. H. Farrell, V. S., who was deputed in August to visit the affected tract and adopt measures, preventive and remedial, suited to the emergency.

The disease appeared in January 1868 in the village of Bansburia, into which it was supposed to have been imported by bullocks bought at the Oolooburia fair. From this place it spread southerly and westerly all over the sub-division, attained its maximum in July and August, and abated in October and November. The mortality from this outbreak is put down by the Deputy Magistrate at 26,151 head of cattle. This was ascertained as the result of a special inquiry. The losses entailed on the agricultural classes were most severely felt, and notwithstanding the remarkable energy displayed by them in striving again and again to replace their losses, the sub-divisional officer states that "a good one-fourth portion of the paddy lands remained untilled for want of cattle." The severity of this outbreak seems to have been enhanced by an unusually heavy rainfall and by the exceptionally high inundation of 1867.

1869. Mr. Farrell's services were in 1869 employed in Jessore, in which district rinderpest prevailed to a severe degree. The plague was most virulent in the sub-divisions of Magoorah (to the east) and Khoolna (to the south). There was also an outbreak at the Satkeera sub-division of the 24-Pergunnahs district in the commencement of the year. In the Diamond Harbour sub-division of the same district, rinderpest continued to prevail to a more limited extent, and towards the close of the year began to appear in villages of the Chooadangah sub-division of the Nuddea district. Here the murrain continued to spread, and attained a maximum in February and March 1870.

1870. This district was visited by the Cattle Plague Commission, who established their head quarters at Chooadangah, and from the 4th to the 25th March studied the nature, symptoms, and treatment of the disease. Rinderpest of a comparatively mild type was found to prevail in most

Historical sketch.

of the villages of the sub-division, and much interesting information as to the past history of this disease, the condition of agricultural stock, &c., was elicited from the people. Cattle disease prevailed to a slighter extent in the Ranaghaut and Bongong sub-divisions, and was subsequently reported to have subsided throughout the district in April. Rinderpest was found to prevail to a great extent in March in the Calcutta milkmen's sheds, and evidence was abundantly obtained to the effect that frequently, or yearly, great losses of dairy and other stock from rinderpest occurred. There was a smart outbreak of this disease in some villages of the Baraset sub-division in March and April; in the Satkeera sub-division slight outbreaks arose from February to June, and throughout the year partial outbreaks occurred in a scattered manner in the sub-division of Diamond Harbour.

From Jessore, also, occasional reports were forwarded of limited visitations in the Jessore, Magoorah, and Bagirhaut sub-divisions, but nowhere, except at Chooadangah, did any widespread epizootic or serious loss of cattle occur.

Still later—in November and December—cases of "gootee" were reported to occur in villages of the Khoostea, Chooadangah, and Ranaghaut sub-divisions of Nuddea, but the disease was scattered and its mortality slight.

DISTRICT OF 24-PERGUNNAHS.

Extract from a "Report on Small-pox in Calcutta, by DR. DUNCAN STEWART, M. D.

PART II.

THE DISEASE AMONG COWS.—(PAGE 84.)

It has been generally believed that the disease called "Matta" prevails every spring among horned cattle in Bengal. I can positively declare that it does not do so in or within 20 miles of Calcutta. Vaccinia.

For the past 15 years I have never failed to inquire for its existence. I have offered rewards, and even paid as much as Rs. 20 in advance to different swindlers merely to bring me to the sight of one case, but invariably was disappointed. Equally difficult and impossible was it till now to get sight of a case of small-pox.

The truth is, that a number of diseases affecting cattle are classed under the same name, and the only distinction made by the common people is between what they consider an "inward" and an "outward eruptive fever." When the fever throws out an eruption of some sort or other on the skin, the case is considered favorable; but if no eruption appears the case is then called one of "inward fever," and is sure to be fatal. Inward fever.

It is evident that under this category of "inward fever" may be included all imaginable diseases. The occurrence, however, of a very fatal epizootic disease among domestic animals, at the same time or season that some exanthematous epidemic appears among the people of the same district, is certainly not uncommon, and deserves notice; on these occasions popular belief assigns to both diseases the same origin, nature, and name. At a meeting of the Medical and Physical Society of Calcutta, a few years ago, a very interesting account was read of an epidemic at Penang, from the pen of Dr. Oxley, wherein it was stated that at the time small-pox was raging in the Settlement, a very fatal disease, which went by the same name, destroyed a great number of horned cattle, poultry, pigs, and sheep. The same thing has occurred at Ceylon and in many parts of the Indian Peninsula. I was not surprised, therefore, to learn early in the autumn of last year that the cattle in and about Calcutta were dying in great numbers from small-pox. I visited all the (*Gowkhanahs*) cow-sheds I could hear of, and inspected very many sick cows; but not one had any pustular eruption which I could discover on any part of the body. I saw several young, fat, clean, and healthy looking cows die, after about three days' fever, with convulsive tremors, bloodshot eyes, and parched mouths. These cases the natives persisted in still calling *matta*, but of the violent "inward" form, "not permitting the discharge of humours on the skin." I observed in others, and generally for a few days, signs of fever, such as panting, lowing, thirst, loss of appetite; then followed violent purging, profuse salivation and pituitary discharge from the nostrils; but on the fourth day ulceration of the tongue and pallet, with bloody purging followed, and death occurred usually on the fourth or fifth day. In a good many cases certain rough elevations were pointed out to me on the skin, having the hair turned back or ruffled over a small inflamed phlegmonous base. A number of these undoubtedly were produced by the burrowing of vermin or bites of insects, but many also may have been pustular without supposing them possessed of a specific character. As no possible good could be expected from experimenting upon human subjects with the matter from such pustules or ulcers, and the consequences could not be foreseen, I did not consider myself warranted in inoculating any children either from the fresh matter or the scabs which formed in any of these animals. Penang epizootic. Ceylon epizootic. Calcutta epizootic. Symptoms. Eruption.

Varicella Bovilla.—Except in three cases out of many hundreds which I inspected, I never found anything like papulæ, vesicles, or pustules on the teats or udders of cows. Two of these three cases occurred in the dairy of my friend, Mr. Rustomjee Cowasjee, and one in Mr. Blacquiere's compound. The fever was slight, and all of them recovered perfectly. The eruption on Mr. Rustomjee's two cows (one a young China cow, the other an imported English cow with a calf at her heels) was confined to the udders. For three days previous to its appearance there was well marked fever with purging and loss of appetite. On the morning of the fourth day several small red spots were perceived on each teat, mostly near the root, but not in the least degree elevated nor surrounded by the slightest inflammation; they even disappeared on pressure. On the following morning they were slightly elevated, but still without any inflamed base or areola. In the evening some of them had dried, and a small circular scale of cuticle could be detached from each by a forceps. A slight limpid exudation appeared to take place from each of these denuded surfaces, which subsequently dried into a thin scale; I therefore punctured one with a fine pointed lancet, and had the satisfaction of seeing a small pellucid drop of serous fluid ooze out from the opening. On the 14th of January (the next morning), at daylight, I opened five or six of these vesicles Varicella. Eruption.

CALCUTTA. Dr. D. Stewart.

which had not yet dried up, and from these, with difficulty, I inoculated three healthy Bengalee children (assisted by Dr. R. M. M. Thomson) on two places on each arm.

Experiments.

On the following day both those vesicles which had been punctured, and all the others, had quite dried up; in a day or two the little scale of cuticle attached to each dropped off, leaving no mark of any sort. From the moment of appearance of the eruption the animals seemed perfectly well, resumed their food, and gave milk as usual. The appearances on the teats of the English cow were precisely the same with those above described in the China cow, but the vesicles were fewer; not more than six or eight could be counted altogether. In Mr. Blacquiere's Bengalee cow we had been told by the cow-keeper, with the usual exaggeration, that there were numerous large vesicles all over the teats and udder, and I went with Mr. R. O'Shaughnessy prepared for a grand field day, having sent thither in advance four or five little black children to be operated on. On our arrival, however, we found precisely similar appearances to those already described; the vesicles on the teats were rather more numerous perhaps—quite distinct, without any areola, and already drying up. Strange to say, among all my professional brethren and all the Veterinary Surgeons of my acquaintance in Calcutta there was not one who had ever seen the cow-pox among cows in England. The only drawings of the disease which I possessed or could lay my hands on were those contained in Rayer's Atlas, which gives a highly-coloured portraiture of the cow-pox on the teat of a cow "after Sacco." I need hardly say that the disease above described, though decidedly exanthematous, bore no resemblance to the cow-pox of Gloucester, nor indeed to any other bovine disease with whose description I am acquainted.

May it not possibly be analogous to varicella and other minor varioloid diseases in man, the last in the scale of eruptive fevers communicable by epidemic infection to animals of their own nature, but not transferable to others of a different species, nor possessing any peculiar prophylactic powers?

Results.

It is almost needless to add that no results followed our experiment.

* * * * * * * *

Mortality.

Mortality of Cows.—It will be seen from the subjoined table that the mortality among cattle commenced much about the same time with that caused by small-pox among the inhabitants.

Mortality among men from Small-pox and among cattle from "Matta" in Calcutta from 1st September 1843 to 1st June 1844.

Month.	Died from Small-pox.	Died from "Matta."
September 1843	48	33
October „	44	19
November „	134	125
December „	154	429
January 1844	315	934
February „	506	543
March „	991	126
April „	411	11
May „	180	13
	2,783	2,233

The mortality in January had become very considerable indeed in town, so much so as to affect materially the supply of milk and butter, but was reported to be much greater in the suburbs, where all the slaughter-sheds are situated. It was asserted, with much probability, that the native butchers in the suburbs were in the habit of slaughtering their cattle the moment they suspected them of having caught the disease, and stories circulated of infected beef being seen and sold in the market covered with dreadful marks of "inward" small-pox. How far this may have been the case must remain doubtful. Mr. Allan Webb, Garrison Assistant Surgeon of Fort William, appears certainly to have detected some meat supplied to the European Troops which was of an improper description, but whether this was not a matter of frequent previous occurrence, and whether a little more vigilance in the inspection of the meat might not have sufficed to prevent all such improprieties and obviated the necessity for the total abstinence which ensued, I am not prepared to say. The panic among all beef-eaters became universal, and did the Hindoo religion admit of proselytism, its converts might be said to include the entire European and East Indian population, for I believe that for many months scarcely a morsel of the flesh of the sacred animal of Hindoo worship was swallowed in Calcutta. It was not generally known that the

Diseased meat.

mortality was at the same time very great among fowls and pigeons. I visited, along with my zealous friend Mr. Blacquiere, several poultry-yards and pigeon-houses in and about the town, from which we saw the dead fowls taken out by dozens of a morning, said to have died during the night of the universal small-pox. I could see nothing the matter with the birds, unless a certain degree of swelling and redness around the eyes might be indicative of their disease. CALCUTTA. Dr. D. Stewart. Disease of fowls.

* * * * * * * *

The very interesting pamphlet (on the poisonous effects of diseased meat, by Dr. Hosack of New York) whereof the above is an imperfect summary, falling into my hands at such a moment greatly interested me, and stimulated my inquiries into the nature of the epizootic malady prevailing in and around Calcutta, some connection between which and the mortality among the inhabitants was, to say the least, a matter of universal belief.

My indefatigable friend Mr. Blacquiere, who, at the age of nearly 80, retains all the philanthropic energies and affections of 18, at once entered with me into the research. His replies to my queries I subjoin in his own words:— Mr. Blacquiere.

Question.—Are there any natives who habitually consume dead meat? Who are they? Are they numerous in Calcutta? What parts of the town do they dwell in? Are they generally healthy or sickly? Have you ever heard of any peculiar sickness among them caused by or attributed to their eating tainted or diseased meat? Consumers of dead and diseased meat.

Answer.—A class called Chamars, natives of Hindoostan, live upon dead meat. The class is numerous. They live in different parts of this town and are healthy. I have never heard of any peculiar sickness among them attributed to their eating tainted or diseased meat.

Question.—Have you ever known or heard of the disease called *matta* among cattle being communicated to those who handled or milked the cows?

Answer.—I have not.

Question.—Has there, within your recollection, been any small-pox epidemic in Calcutta affecting the cattle and the population in the same way as the present?

Answer.—In or about the year 1795-96 there was a small-pox epidemic in and about Calcutta during the months of January and February, during which the mortality was great among men and cattle of all sorts, but I have no record of the number. *Matta* in 1795-96.

Question.—Do the Natives consider the human small-pox the same disease as that which destroyed their cattle? and why?

Answer.—They do; the cattle have what the natives call the *matta*, or small-pox, at the same periods of the year that the human species are affected with it.

From Mr. Monteith, the head of an extensive tannery concern in Sealdah, having large Government contracts for belts, boots, and military leather accoutrements, I received the following frank and obliging letter and replies to queries:— Mr. Monteith.

No. 145. I hope you will pardon me for the delay I have made in replying to your letter of the 14th instant.

I have answered all your questions in the form you sent, and beg leave to give you a small outline in this letter.

In your letter of the 14th instant you ask what were the appearances of the cattle said to have died of small-pox. There was no difference from others in appearance. But the hides are of less value on account of being marked from brands, sores, &c. The cattle I get generally are worn out hackney draught cattle. I have never examined any minutely, nor am I a judge of diseases among cattle. But from what information I can gain from a number of butchers and those that deal in cattle, they assert that they cannot say that one disease destroys more than another, but I, in general, get more dead cattle in the rains than any other time of the year. I should say, by looking over my stock-book for the last year, that I received on an average ten to fifteen per month more than formerly this year, say since last January. The difference in the quality of a hide taken off the dead animal to one slaughtered is on account of the animal not being bled, and the blood gets between the flesh and the skin, and very soon spoils the hide—makes it of a soft spongy nature by the time it is tanned. Hides dead.

– CALCUTTA.
Dr. D. Stewart.

You wish to know if my people are a healthy race of people; they are very much so indeed, and I have not had one-sixteenth of the sickness among my men this year to that

Consumers of dead meat.

of former years, nor have I lost a man this year yet by death; they say they will eat any fish, flesh, or fowl that dies, of whatever nature, only let them cook it their own way. I would not get a man to work if I entirely prohibited them from eating the meat of dead cattle. There is but one caste that eats the horse's meat, the Doony or Mater caste.

I do not think that ever they took any meat to a market, but among their own caste.

I will at all times be most happy to give all the information I can on the subject.

Calcutta, 30th April 1844. (Signed) JOHN MONTEITH.

Hides,

Question.—You are in the habit of purchasing fresh hides for tanning. Are these all hides of slaughtered cattle or of cattle which die naturally?

slaughtered.

Answer.—Slaughtered hides.

Question.—What number of hides in every 100 brought to you are slaughtered, and what have died?

Answer.—Slaughtered 2,000 to 1 dead.

Question—What diseases do the cattle generally die of?

Answer.—I cannot say indeed.

Dead

Question.—Are the dead cattle brought entire to you, or only their hides?

Answer.—Principally entire.

Question.—What becomes of the flesh and bones of those dead cattle which are skinned at your establishment?

meat

Answer.—The meat is mostly taken by the Moochies, and the remainder devoured by the vultures, and the bones are buried in the earth.

Question.—Have you ever found any of your own, or other people carrying off the flesh of dead cattle for market?

consumed by

Answer.—My people have carried off plenty of it till stopped by me, but I believe only to their own caste that had not the opportunity of obtaining it otherwise.

Question.—Who purchase such meat? and what class of natives consume it?

Chamars.

Answer.—The Chamar caste only.

Question.—Is this class of natives numerous in the neighbourhood of Calcutta?

Answer.—Yes, numerous in the suburbs.

Question.—Do they consume the dead meat of other animals—sheep, deer, goats, fowls, fish—when they can get it?

Answer.—Yes, very happy to get it.

Question.—Are they a sickly or unhealthy looking people? Are they more subject to cholera or fever?

No bad effect.

Answer.—They are a hardy race of people, seldom sick, only through drink, when to excess; and when ill, principally through intermittent fevers or spleen. In seven years I have lost only fifteen men out of 100 to 120 daily at work.

Question.—Do you think that dead meat has ever been carried into the Calcutta Native Bazaars and sold there?

Not sold.

Answer.—No, I do not; as stated before, only among their own caste in the suburbs.

Question.—What way do they prepare this dead meat for market? smoked or salted? if the latter, with what salt?

Answer.—They cut it in stripes and dry it in the sun; no salt whatever used; sometimes they half grill it and then take it away.

Question.—Have you any idea of the price it sells at?

Answer.—No, I do not believe it was sold for money to any except their *jat-byes*

During the late Epidemic among Cattle.

CALCUTTA.
Dr. D. Stewart.

Question.—What diseases did the horned cattle die of generally?

Answer.—Cannot say more than was told me; some of them with the *small-pox* and others of the *bloody murrain.* Murrain.

Question.—Did you see any dead cattle with well marked *pustular* disease on the abdomen, udder, teats, and soft parts?

Answer.—Cannot say, never having examined them so minutely.

Question.—Were the dead cattle generally emaciated, or fat and plump? Did they die suddenly or of a long illness?

Answer.—Generally worn out and lean.

Question.—Among the hides of dead cattle, did you find any deep ulcers, or marks of round pustules into the true skin which appeared to be caused by a disease like small-pox causing holes in the skin? Hides.

Answer.—None whatever.

Question.—Were any of the carcasses opened and the viscera examined to see if they were healthy or diseased?

Answer.—No; none.

Question.—What difference did you observe in hides of slaughtered and of dead (naturally) cattle?

Answer.—The usual difference, the slaughtered preferable to the dead, not having been bled, evidently the hide of less value.

Question.—What was the supposed mortality among cattle this year and formerly?

Answer.—Not more than last year; the average is ten per month in my tannery from 1st of January.

(Signed) JOHN MONTEITH.

From Mr. Teil, another large Government Contractor and head of an extensive tannery near Calcutta, I have been obligingly favoured with the following information:— Mr. Teil.

Question.—Do you purchase fresh hides from butchers, or do you slaughter cattle yourself? Hides.

Answer.—I purchase fresh hides from butchers daily, but do not slaughter any myself.

Question.—Are the hides of slaughtered cattle worse or better than those of cattle which die naturally? Can you distinguish these hides from each other when fresh?

Answer.—Hides from slaughtered cattle are considerably better than those from cattle that die naturally. I can in almost every case distinguish the one from the other when brought fresh to me.

Question.—What diseases do cattle chiefly die of in Bengal? Cattle diseases.

Answer.—Chiefly, I believe, of two diseases, that of pox and of *matta.*

Question.—Is the disease called *matta* common every spring, or does it occur at uncertain and distant intervals of time?

Answer.—No; it is not common every spring although that is the time it generally prevails. Matta.

Question.—Have you seen many cases of what is called *matta* this year, and what were the symptoms?

Answer.—No, I have not; the symptoms are, I believe, generally a swelling in the head and tongue of the beast.

Question.—Have any cattle had pimples or pustules about the udder resembling the cow-pox you have seen at Home?

Answer.—I have not examined so minutely as to observe whether such is the case or not.

Question.—Did you ever hear in this country of the attendants or milkmen getting an aruptive disease from handling the teats of such cows, or the heels of horses?

Answer.—I have never known such to be the case.

CALCUTTA.
Dr. D. Stewart.
Dead meat.

Question.—Is there not a numerous class of natives who consume flesh indiscriminately, whether slaughtered or not? Have you seen or heard of any of them suffering illness from eating tainted meat or the flesh of cattle who had died of matta.

Answer.—There is one class of natives called Chamars, who, I believe, eat meat indiscriminately, whether slaughtered or not. I have never known any of them to suffer illness directly from eating such meat.

Mr. Greenfield.

As regards the nature of the recent epidemic, the information derived from Mr. Greenfield, an extensive cattle dealer in the neighbourhood of Calcutta, and the only person whom I have met who had seen and was practically acquainted with cattle and their habits, diseases, treatment, &c., in Europe, is valuable and interesting.

Question.—I believe you keep a cattle farm and slaughter-house at Acra. Be so good as to say what cattle are fed on your estate (I mean fattened and prepared for slaughter), and what are purchased ready for slaughter, or do you prepare all yourself, or buy all ready?

Answer.—Pigs, sheep, bullocks, buffaloes, goats and poultry of every kind are fed on Acra farm. I breed from 2 to 300 China pigs yearly, and feed them for slaughter on the farm. I purchase all my pigs for curing loan, and fat them five to six months before slaughter; some of my beef I fat myself, and some I purchase from others when they are fattened. I cannot kill beef on the farm, as my people are all Hindoos. I get Mussulmen to do it out of the farm.

Cattle diseases.

Question.—Are the "black cattle" subject, in Bengal, to an epidemic disease (called matta) annually or only occasionally. Have you ever seen it in your own farm, and is it usually attended with an eruption of *pocks* on the udder and belly and teats; or is the disease characterized more usually by ulcerated mouth, bloody purging and fever? Do you not yourself distinguish several diseases some with pocks and some without; and which is the most common?

Answer.—I have been here now nine years, and I have never had any disease among my cattle until this year; and this year I have lost 60 cows with a disease that has been all over our neighbourhood, something like *strangles* or *glanders*: it first commenced on bullocks and then on my buffaloes; no eruption on the skin or udder or teats, only the eyes, tongue and throat were affected, when the animal died from being strangled, as the passages were completely stopped: they *were all suddenly taken ill* and seldom lived more than three days, many only one; no purging, no discolour of water appeared. I have seen the pox in England among cows, but this is nothing like it. I have seen two or three cases here of what is called in Sussex the puck; it commences on the bullock in the hind leg generally, and runs all over his body under the skin until it comes to his heart; it is easily known by striking your finger on the animal; it's all hollow.

Question.—What has been the true epidemic of this year so fatal among black cattle?

Answer.—The disease has not confined itself to black or white cattle; all colours have fallen from it. The *strangles*, I think, is the disease, or *glanders*.

Question.—Did it affect any other cattle, swine, sheep, goats, fowls, pigeons or horses?

Answer.—I had none, except my bullocks and buffaloes, affected with any disease; the cattle were mixed with each other on the farm.

Other animals not affected.

Question.—To what circumstance or circumstances do you attribute the epidemic?

Answer.—I cannot say whether it was the grass they eat or the air.

Question.—Have you ever known it, or do you from grounds believe that the disease has been communicated from the animals to their attendants, and what are the alleged symptoms in such cases?

Answer.—I do not think the disease has been amongst any of my men that have been attending the animals or those that skinned them, as not one man has been ill from it, and I have eight men constantly amongst them.

Hides.

Question.—Do you tan any hides; if so, only those slaughtered at Akra, or by purchase of fresh hides from others? What is the difference between the hides of slaughtered and of dead cattle?

Answer.—I only cure the hides of my own cattle. The hide slaughtered is white and clean. The hide of a dead bullock is red and bloody, and not of so much value.

Question.—Among the numbers killed at your place, what viscera have most frequently been found to be diseased?

"Measles."

Answer.—*Pigs*, the liver and kidney is the only disease we find fatal: the "measles" is not fatal, but frequent, and the meat is always thrown away unfit for use, as it is one mass

of corruption ; its presence is never known until the animal is killed, as there is no appearance on the skin. *Bullocks,* seldom any disease inwardly, as we only deal in fat bullocks, and no bullock will fatten if it is diseased. CALCUTTA. Dr. D Stewart.

Question.—Is liver-complaint most common among cattle, or ulcerated bowels, *i. e.*, dysentery, or diseased lungs ?

Answer.—Liver and the lungs are what we generally find affected ; we have seldom dysentery among our cattle ; when we do, it is in the rains, when the grass is young and *flushy.*

From all the information I have been able to collect, and from my own observations, I conclude that the cattle epidemic of Bengal does *not* prevail statedly and periodically. It does *not* affect those employed about and among them. It does *not* confine itself to milk-giving cows, but destroys all horned cattle ; it is not the Jennerian cow-pox of Gloucester. There are several fatal diseases among cattle, some attended with eruptions and others without any ; the *latter* are the most fatal. Of the former, some are milder than others ; none are known or said or supposed to exercise any prophylactic power against small-pox, nor to secure the animal affected from a second attack. Conclusions.

Calcutta Slaughter-sheds and Meat Market.—The following polite communication was addressed to me by Mr. Mytton, Magistrate of the 24-Pergunnahs, (Suburbs of Calcutta), not ong after his perusal of the aforementioned American pamphlet, which I had sent to him :—

From the Magistrate of the 24-Pergunnahs, to DR. STEWART, M. D., &C., &C.,—*Dated Alipore, the 26th April* 1844.

On receipt of your note, dated the 14th instant, I deputed my head clerk, Mr. Floyd, to visit all the butchers' shops in the suburbs and to collect all the information regarding them and the sale of meat which he could obtain. The result he has embodied in a very intelligent report, a copy of which I annex. The statistical information being derived from the butchers themselves is not likely to be very exact, but it may be considered as pretty certain that the number of cattle slaughtered at the present time is much smaller than at the corresponding period in 1843. You will gather that an opinion is prevalent, even amongst the natives, that it is not quite safe to eat beef, which is not at all surprising, considering the great mortality which appears to have taken place among the cattle. Butchers' shops.

2. My attention has been attracted by the inquiry and inspection which has been made to the state of the several slaughter-houses ; and the proprietors of these, which are in a filthy state, have been allowed a reasonable period to remedy the nuisance brought to notice, and if the order be not attended to, they will incur penalties under Act XXI of 1841. Slaughter-houses.

3. I shall in future have a frequent inspection of all the slaughter-houses made by my European subordinates, and occasionally by myself, and I hope by these means to effect some improvement. It is, however, next to impossible to persuade or compel natives to adopt a complete measure of improvement involving an immediate outlay, and without such, it is scarcely to be expected that the nuisance can be effectually obviated.

4. There is no doubt that the river side is the only place where a sufficient quantity of water and a proper drainage for the blood, &c., can be obtained, and it is a matter not unworthy the consideration of Government whether it would not be desirable to purchase two spots of ground, one to the north and one to the south of Calcutta, either on this or on the opposite side of the river, and to construct suitable slaughter-houses with every convenience for disposing, in a proper manner, of the bones and garbage. These might be placed under European management, and the slaughter of animals for sale at any other place within a certain circuit, or the sale of any meat not slaughtered at these establishments, forbidden. Under such a system there might be some hope of the sale of unwholesome meat being prevented. If it be objected that this would destroy competition, it may be urged, in answer, that there is scarcely any competition at present, the difficulty of procuring ground for the establishment of slaughter-houses, whether on account of the prejudices of the Hindoos or the well-founded objections of other neighbours on the score of nuisance, insures to Peer Ally almost a monopoly.

5. I perceive that the plan advocated by me in the above paragraph was proposed by a medical committee at New York, in the report you sent for my perusal, and it is there stated that similar establishments were erected by the French Government at Paris, so far back as the year 1809. If it was considered desirable in such latitudes as those of New York and Paris, to place slaughter-houses under municipal control, how much more so is it in this, where the climate, the want of drainage, and (at some seasons) of water, together with the slovenly habits of the native, render supervision more necessary to secure pure and healthy food, and prevent the slaughter-houses from becoming nuisances.

CALCUTTA.

Dr. D. Stewart.

From MR. FLOYD, *Head Clerk to* R. H. MYTTON, ESQ., *Magistrate of the* 24-*Pergunnahs.*

Butchers' shops at Kidderpore.

In conformity with your orders of yesterday, to inquire into certain circumstances connected with the butcher shops, &c., in the jurisdiction of the suburbs thanas, I proceeded this morning (Tuesday, 17th April) to that of Nowhazaree. The first place I visited, in connection with my inquiry, was the haut at the Military Orphan School Bazar, where cattle from Ooloobaria and other parts are brought up for sale twice in the week. There were a pretty good number on the ground, but not so many as have been known to be brought on former occasions. This diminution is said to have taken place since the prevalence of small-pox. With the exception of one (which from age or disease, or both, could not survive many days), all the cattle I saw, though some were aged and very lean, appeared healthy ; at all events were pronounced to be so by competent judges ; but I was given to understand that at times cows suffering from the malady have been brought within the precincts of the *haut*, but not finding purchasers on the spot, have been led out again and sold to butchers for trifling sums on the Kidderpore Bridge, for the sake (it is alleged) of their hides ; but from what I subsequently witnessed and heard, I am inclined to think that some butchers find as much use for the flesh as they do for the skin. I spoke to the manager of the *haut* not to allow admittance to such animals, and advised him to send the dealers that bring them to the Police, but it is the former's interest to collect all he can, and with natives, generally, money is the primary object.

I next called at the Kidderpore Thana and accompanied by the Daroga visited two butchers' shops situated at the opposite side of the road. In one of these were exposed for sale a couple of sheep apparently just slaughtered. I could not find fault with the mutton, but in the adjoining shop, where beef is sold, I found that immediately behind it they slaughtered almost every day ; in consequence of which the place was far from sweet ; plenty of skulls and bones lay about, and from their appearance I should say they had been accumulating for months. These shops are almost surrounded by huts, but the proprietor of the land would have it that he is put to some expense in preventing the place from becoming offensive. I gave him to understand that I thought otherwise, and trust he will see the necessity of removing the nuisance, for I can call it nothing else.

Garden Reach

On the Circular Garden Reach Road I discovered one small shop, but it was closed and the proprietor absent ; here the natives told me that small-pox had prevailed a short time ago to a great extent, and some were of opinion that the epidemic carried off more Mussulmen than Hindoos. Beef they remark was very cheap, and that people parted with their cattle for anything rather than lose them through disease.

Diseased cattle sold.

I know of an up-country cow, three or four months gone with calf, said to give almost seven seers of milk a day, sell for only Rupees seventeen, whereas in better times animals of her description have brought fifty or sixty, if not more. They further assured me that some families have *sold off* on the first appearance of the evil among their cattle, not caring, in all probability, whether they were purchased for the knife or the plough.

At a short distance from the *pharee*, at Garden Reach, is another shop which was also closed, and at *Burtulla* on the road to Akra Farm, are two others, and places attached for slaughtering ; on examining the beef in one of these shops, I was pleased with its appearance, but a few black spots in the region of the kidney made me suspect that all was not right. I therefore made the attendant at the shop cut out the piece, which I took down to the farm and had it inspected by the Assistants at Mr. Greenfield's, who pronounced it free from disease. This meat, the *best* in the whole Kidderpore Division, was selling at only four pice the seer, and that of inferior quality in the next shop at the same price. A respectable old Mahomedan gave it as his opinion that *much of the sickness was owing to the bad meat offered for sale,* and others intimated that, in the surrounding hamlets, both men and cattle were still suffering. The farm has lost the best part of its cows and buffaloes, and on the Budge-Budge side I heard similar accounts. Here, too, the butchers keep their compounds extremely filthy, of which there were loud complaint by the *ryots*. I fear my speaking will have no good effect, though I endeavoured to persuade them into something like a compliance with the order to keep them clean in future. On my way back my conveyance was stopped by a butcher who complained that some of his fraternity were in the habit of coming from town with tainted meat and selling under price, which statement was verified almost immediately after ; for, opposite a village where I stopped, a fakeer-looking man had some of the filthiest stuff imaginable in his basket, which he was selling or offering for sale to some poor people, who, when they perceived that his conduct was noticed, protested against his doing so. The basket contained cloth that had not been washed for an age, and the liver, &c., of cows. I cannot describe in medical phraseology the precise state of the latter, but suffice it to say that it was not only tainted, but covered with blotches, or more properly speaking, *perfectly ulcerous*, some of the sores discharging a yellowish

Budge-Budge

substance altogether disgusting to the sight; in one bit in particular there was a large collection of matter which the vendor in question removed and threw away; a dog standing by prevented my securing it. This man came from *Kurria*, and the price he asked for the portion I brought for your inspection was about one pice. CALCUTTA. Dr. D. Stewart.

At Kidderpore, west of the School, I witnessed a sight almost as disgustful,—a liver that had become as black as ink from keeping and quite putrified, hung up in a butcher's shop for sale. I gave the owner's servant four pice, the price demanded for it, and think it was the best bargain he made since the morning. You, sir, have seen this as well as the former, so that I shall refrain from saying anything further on the subject. I now proceed to notice part of a cow which had been slaughtered on the morning of the 16th, and which at about 12 P. M., this day (the 17th) was still in the shop and going by degrees for two pice the seer; there was more than flesh about it, and so dry and yellow did it appear that one could feel for the poor whom necessity would drive to bargain for it; but the whole of this meat was not likely to sell in the course of the afternoon as there was more of evidently longer standing to be disposed of. Buxoo, the attendant above alluded to, said that this master had a *Kill-khana* which contained no cattle at the time. I notwithstanding proceeded to inspect the place, and found no less than six or seven cows tied together without drink or provender, and the compound in an extremely filthy condition. How natives put up with the offensive smell this place emits I know not, but those who went in with me appeared glad when they got out again. Bad meat.

This day (the 18th) I visited one of the most extensive slaughter-houses on the east of Calcutta, conducted by *Peeroo Allie Kupoy* of Kurria or "Armanny Bazar." The place has been apparently established at some expense, but a total absence of regularity and cleanness, I am sorry to say, prevails. I annex a sketch of the place, and have to observe that though the butchers pursue their calling without experiencing the least ill effects, the stench issuing from the three points of the compass marked thus (+) is truly unbearable. I was not able to breathe, and feel persuaded that had I remained longer under the sheds than I did, where I could observe numerous people were at work, suffocation would have ensued. The blood-stained floors indicated that water is not so freely used as those concerned would make it appear is the case; in fact there is not a tank in the neighbourhood capable of supplying 4 or 500 bags of water a day, and the river is too far off to admit of a constant supply being brought from thence. Towards the north the land lies very low, and it is there that the greatest nuisance exists—every description of dirt and filth is disposed there, and suffered to putrefy, which must render the neighbourhood most unhealthy; nay, a strong southerly breeze must convey what cannot be considered, under any circumstances, wholesome, over the best part of Entally. The late Mr. Overseer Dyson had orders, I understand, to keep an eye upon the butchers, and by no means to allow them to neglect the place as far as respected cleanliness; since his demise, they have not only neglected the place, but have deposited carcasses on the premises. There were I should say no less than 200 of these in a heap, which have accumulated since February; what the state of the low land will be in the monsoon, should the evil not be put down before that period, experience alone must decide. Kurria.

At a short distance from this establishment dwells a butcher, who has one part of his compound completely covered with the skulls of cows. This man thinks he has a right to do what he pleases on his own ground; but he is a pest to the neighbourhood; his name is Kulloo. I looked in at Peer Allie's stand of bullocks to see if I could find any labouring under the disease which forms the present subject of inquiry. With the exception of two which appeared dull and drooping (but which the keepers would have it were as healthy as the rest), I thought the rest were *quite free*, though they were somewhat low in flesh. These stands contained cattle for the use of the troops in the fort; here a native evidently spoke the truth when he said that the sickly among the number were the first to be led to slaughter. It is impossible to glean facts from interested parties, but this man was a Hindoo, and did not seem to be aware of any sheep having been known to die of small-pox in this part of the suburbs. Diseased cattle.

There were other private stands where I also saw cattle, some of them could hardly keep on their legs, and if not sold to the butchers, the owners would soon have been put to the expense of having them removed to the river. The flesh of such finds its way to the shops situated in the several divisions visited by me, and here I would observe, that *Kurria* supplies not only the Town of Calcutta, but the best part of the district, and has more indigent butchers in waiting to snatch up the refuse of the cows than birds of prey, and also Chamars and Domes, who, it may be relied on, take away the flesh of animals dying natural deaths, with the view most probably to send it into the markets or villages, though the fact may not be admitted.

If permitted to offer an opinion, I would respectfully beg to observe, that considering the state in which this, the most extensive slaughter-house in India, is generally kept, its locality and the great reason there exists for suspecting that unwholesome meat is too often introduced in our markets, European supervision would not perhaps be considered superfluous. I am aware that the State is desirous of avoiding expense, but may the Government not be persuaded to levy a small tax on every head of cattle slaughtered at *Kurria* and other places, to meet the salary of one or two officers who could reside on the spot, as near to it as possible,

CALCUTTA.
Dr. D. Stewart.

and see that none but those actually fit for use are slaughtered. This person could improve the place, and see that it is kept clean, and visit all the *sheep folds* in the suburbs, causing to be separated the sick from the healthy, which, as I have shown, is not done at present. I am aware that the office might prove one of great pecuniary gain, and that the best are liable to be tempted to do wrong, but I trust a conscientious European could be found to do justice to all concerned, and who would by no means neglect the well-being of his fellow-creatures: or the wealthy of this populous city would not perhaps object to the establishment of a properly organized slaughter-house *on the river-side*, such as they have at Akra, if *Peer Allee* refused or neglected to render his place such as it should be. His rates of slaughtering are as follows:—for the best conditioned cows, 3 annas; for inferior animals, 1-6 pie; calves, at 2-6, and sheep and goats, 6 pie each.

Chitpore.

I next proceeded to Chitpore *viâ* Sealdah. There are no shops at the latter place, but at Narcooldanga a slaughter-house has been recently established, and one at the former, meat being hawked about by butchers from Kumia and Dum-Dum. About sixteen sheep are daily slaughtered at Chitpore by a person said to be in the habit of supplying gentlemen, and consequently keeping superior cattle.

Small-pox

Many are falling victims to *small-pox* and cholera in this Thana (Chitpore), though, since the fall of rain, the former disease has somewhat abated. Almost everywhere I perceived children from six to eight years old, who had been suffering from it. There are but a few cows here now, great numbers having died a month or two ago, and two were said to have been carried to the river in the morning. I had my eyes about me, but did not meet with a single cow or bullock labouring under the disease, but was told that the disease carried off the best portion throughout the 24-Pergunnahs; a very short period ago, a horse at Chitpore, took the pox and died.

Bad fish

While conversing with some natives, I learnt that whenever salted fish (especially the hilsa) has been brought from *Furreedpore*, the cholera has been known to be most prevalent—a circumstance not unworthy of consideration. That such is sold at Chitla Haut, I am pretty sure, for a Furreedpore fish merchant was himself attacked at that place not long since and died on the spot. I have myself witnessed the flesh of *deer*, in the worst stage of decomposition, exported from the Soonderbunds, and exposed for sale at Chitla. Of this natives are particularly fond, and many probably fall victims to cholera through eating it. Another

Bad rice.

circumstance was brought to my notice which I cannot pass over, since the abuse which it exposes prevails almost everywhere: it frequently happens, that boats laden with rice often sink; the rice, if recovered, is sold to the best advantage; this rice from having soaked for days, becomes fermented, and consequently cannot be good or eatable; it is notwithstanding ground, and made into cakes, to which is applied *goor*, or inferior treacle, commonly used for hookah tobacco, and then cooked in the worst description of mustard oil. These cakes are of the size of a quarter plate, hard, and heavy, and as a couple satisfies hunger, the poor prefer them to the more clean but expensive confectionery of the country. They are called *malpoous*, and are of a brown colour. *Dhalpoorees*, too, are known to cause sickness, and with the above are pretty largely sold. I had a confectioner, or rather a *Moira* (for he said he was not professionally a confectioner) come to me, and found among other things a number of *malpoous* and *dhalpoorees* in his wooden platter. He admitted that they had not been prepared by him, nor did they belong to him, but he had them for commission sale. The natives he knew were afraid to use *malpoous*, because they were injurious, but what could he do; if sold, they brought him a few pice! One standing by observed, "did you not sell some to a person the other day and advise him to drink water after he had eaten them, which instantly brought on looseness?"

Talligunge

Understanding that there are shops at *Tulligunge*, Thana Tazerat, I proceeded in that direction today and found that here also *Kurria* butchers were to be met with. There were a few shops open containing the usual description of beef, (mutton appeared to be used by the Shazadas only, of which I saw one shop) and I learnt from one of the commission agents, that Kurria Killkhana this time last year used to send twelve cows per diem for the use of six shops at Talligunge, whereas it now only sends three (or four) in consequence of beef not being in much requisition. I trust I have not been remiss in my inquiries as to whether there are any who sell the meat of animals dying a natural death; none have been detected in doing so; but it is alleged that animals in the last stage of existence have been brought on carts to butchers' houses and there killed.

Milk.

Other establishments of equal importance to the subject of inquiry exist in this district. I allude to the collection of milk by Gowalas hired from almost every village, for making the butter which is generally used by Europeans, and for butter-milk and *ghee*, both which are largely used by natives. It is questionable whether a native depending solely on the sale of his milk will tell the Gowalas' collector that his cow is sick and should not be milked, and also whether the hired servant, and equally so his master, cares whether the milk is from a healthy or sick cow.

Annexed is a statement containing the names of butchers, situation of their shops, and other information, which I hope will prove satisfactory.

Table showing the result of the inquiry instituted by order of the Magistrate, into the state and price of meat sold in the Suburb Thanas of 24-Pergunnahs, Slaughter-houses, where situated, and other particulars. April 1844.

Thanas.	Butchers' shops where situated.	Names of Proprietors.	Number of cows slaughtered per week last year at this time.	Calves.	Sheep.	Goats.	Kids.	Number of cows slaughtered per week at the present time.	Calves.	Sheep.	Goats.	Kids.	Price of each description of meat last year.	Price of each description of meat at present.	Remarks.
													Per seer.	Per seer.	
Nowhazaree	Kidderpore ...	Peerbux Cassy ...	...	...	8	...	...	...	...	8	...	...	3 annas...	3 annas .	Mutton pretty good; sells no beef.
Ditto ...	Ditto ...	Jummun „ ...	8	...	...	...	...	8	...	...	...	...	1 anna ...	1 anna ...	Slaughter-house very filthy, containing one cow evidently healthy, none had been slaughtered here this day.
Ditto ...	Allipnagur ...	Ayrip „ ...	4 to 8	...	...	...	...	4 to 8	...	...	...	...	1 „ ...	1 „ ..	Shop closed.
Ditto ...	Burtulla ...	Bundoo „ ...	8	...	...	...	...	8	...	...	..	...	1 „ ...	1 „ ...	Good slaughter-house, filthy.*
Ditto ...	Ditto ...	Jummun „ ...	8	...	...	...	...	8	...	...	...	...	1 „ ...	1 „ ...	Inferior, ditto ditto.
Ditto ...	Ramchunderpore ...	Surrubdee „ ...	8	...	...	...	...	8	...	...	...	...	.....	2 pice ...	Very bad, ditto ditto.*
Manictulla ...	Armanee Bazar ...	Peer Allie „ ...	2,100	350	170	40	...	1,400	340	170	40	...	Not sold	here ...	State of this establishment will be found described in report accompanying.
Chitpore ...	Road to Barenagore	Closed and the proprietor absent.	...	...	...	..	...	...	...	...	...	...			
Tazerat ...	Talligunge ...	Bhowaroo Shaik ...	...	...	...	...	...	...	...	14	...	...	.....	3 annas...	Supplies the Mysore Princes.
Ditto ...	Ditto ...	Five shops conducted by Gurreebola and others. The sixth has been abandoned.	84	...	...	...	...	About 21	...	...	...	..	1 anna ...	1 anna ...	Receive their supply of inferior meat from Peer Allie's slaughter-house, at Kurrya or Armanee Bazar.

* The cows in these places appeared free from disease.

J. FLOYD.

Calcutta.
Dr. D. Stewart.

DIAMOND HARBOUR. R. Thompson, Esq.

From—RIVERS THOMPSON, Esq., *Officiating Commissioner of the Presidency Division, to the Secretary to the Government of Bengal, Judicial Department,—No.* 144, *dated Calcutta,* 14*th May* 1869.

Referring to your letter No. 116, dated 12th January 1869, I have the honor to submit, in original, the accompanying papers* received from the Magistrate of the 24-Pergunnahs, including a copy of Veterinary Surgeon Farrell's report of his operations in connection with the cattle disease which prevailed in the villages of the Diamond Harbour Sub-division during some months of last year.

* Magistrate of 24-Pergunnahs, No. 183, dated 7th May, with a letter from the Deputy Magistrate of Diamond Harbour, dated 3rd May.
Magistrate of 24-Pergunnahs' letter No. 162, dated 20th April, with enclosures, containing a copy of Dr. Farrell's report and an original plan.

Origin.

2. From the letter of the Deputy Magistrate, who was in charge of this Sub-division for the greater part of the time that the disease prevailed, it would appear, in opposition to Doctor Farrell's opinion, that the epizootic originated with the importation of some diseased cattle into one of the villages of the Diamond Harbour Sub-division, from the fair held at Ooloobaria in January 1868. The cases, however, were either not very numerous at so early a date, or the violent character of the disease had not been ascertained, for it was not till June 1868 that the local authorities first brought to notice that small-pox had broken out among cattle to an alarming extent in the jurisdiction of the Sooltanpore Police Station, embracing in its ravages some thirty villages. The facts were reported to Government in the letter from this office, No. 188, dated 28th July last, requesting, if it were possible, that a Veterinary Surgeon might be deputed to visit the locality and render such aid and advice as he could give. In the meantime instructions were sent to the local officers to adopt every means in their power to isolate the diseased cattle and to prevent the complaint spreading.

3. A later report from Diamond Harbour, received here on the 31st July, brought to our knowledge the result of the Deputy Magistrate's personal inquiries at Sooltanpore, which showed that within that Police jurisdiction 464 head of cattle had died under the disease up to the middle of that month. It was further shown that the disease had assumed a most virulent type, was not amenable to any treatment which the natives themselves could supply, and that even the experiment of removing the cattle to a distance from the affected places had failed to arrest the calamity. The most serious fears were entertained, that so large a mortality in the cattle of the place would materially affect the cultivation of the land.

4. The orders of the Lieutenant Governor, dated 1st August 1868, intimating that an application had been submitted to the Government of India for the deputation of a Veterinary Surgeon were followed by the services of Doctor Farrell being placed at the disposal of the Commissioner of the Division, for employment in the affected locality; and on the 5th of August that gentleman was in communication with the Magistrate of the district, and reported his arrival at Diamond Harbour with a sufficient supply of medicines and other necessaries on the 8th of the same month.

Mortality.

5. From that date up to the close of the year when the disease had almost died out, weekly reports have been regularly submitted to this office, showing the progress of Doctor Farrell's operations, and of the number of deaths among the cattle. The full report which Doctor Farrell has now sent, details his proceedings from the time that he assumed charge of the special duties imposed upon him till his services were formally dispensed with, on the 6th January last. From that time repeated applications have been made to Doctor Farrell for the submission of the report which the Government required, and it was only on the 25th March last that it was received, undated, in the Magistrate's office.

6. Upon one point, the total number of deaths from this epidemic, I am quite at a loss to reconcile the statements of the Deputy Magistrate and the returns submitted by Doctor Farrell as marginally noted; and the explanations which I have since obtained from the local authorities do not satisfy me that the Magistrate and his subordinate are at all correct in fixing the total number of deaths at 26,151 heads. It may be quite true that the disease had prevailed throughout the Diamond Harbour Sub-division from the beginning of the year 1868, and that it was only on its assuming a virulent form, about June last, that the matter was brought under official cognizance. Doctor Farrell's figures commenced from the month of August, and are based upon the number which actually came under his treatment. The actual number of deaths may be somewhat in excess, but I do not think, even admitting the existence of the disease from the commencement of the year, that Baboo Hem Chunder's returns, from inquiries among the Zemindars and the employment of an agent visiting from village to village, are based upon any accurate data. I scarcely believe there were so many head of cattle in the Sub-division; and certainly, if the facts were as now reported, and some 20,000 head of cattle died before June from the murrain, the

Mr. Farrell's return of deaths from August last, 4,927.
The Deputy Magistrate's from the commencement of the year, 26,151.

executive officers of the district were very remiss in not bringing the fact prominently to notice with a view to the adoption of remedial measures earlier. I discredit however the accuracy of the statement altogether. DIAMOND HARBOUR. R. Thompson, Esq.

7. The proposition with which Dr. Farrell supplements his report, as regards the establishment by Government of a Veterinary School in Calcutta, appears somewhat premature. Endeavours are being made, by the circulation of pamphlets in the vernacular, to interest the native community in the districts on the subject of the general treatment, breeding, and care of cattle, and till some appreciation is shown by the natives themselves of the endeavours already made by Government in that direction, I do not suppose such a proposal as that referred to need be seriously entertained. Veterinary School.

Extract from General Report of BABOO HEM CHUNDER KERR, *Deputy Magistrate of Diamond Harbour, for* 1868.

In the early part of the past year small-pox, which had commenced raging from 1867 in some of the villages comprising the Sooltanpore Thannah, gradually disappeared, and since then all has gone on well. But while the health of men and women did not suffer, that of the cattle suffered tremendously, and my inquiries lead me to believe that, more or less, 26,151 head of cattle fell victims to the plague. I beg to subjoin a list of the villages affected, and the number of cattle that died in each village. I also beg to subjoin a plan showing the situation of these villages. Baboo H. C. Kerr.

LIST OF VILLAGES.

STATION SOOLTANPORE.

Bansburia	...	...	150	Gurrankatty	...	...	30	Mortality.
Luckipore	...	...	160	Joyrampore	...	...	50	
Bosorgram	...	...	125	Culpee	...	...	20	
Belpookhoria	...	...	160	Romzannugger	...	...	20	
Tentoolberia	...	...	125	Burrakorah	...	...	40	
Jhikra	...	...	100	Meerzapore	...	...	90	
Maunapara	...	...	70	Ramsarunpore	...	...	50	
Nakally	...	...	150	Suntoshpore	...	...	125	
Arya Bhoerubbee Tolla		...	140	Gowreepore	...	...	30	
Taley	...	...	100	Abkole	...	...	35	
Joomoory	...	...	160	Koyekhallee	...	...	60	
Kantabaniah	...	...	100	Gabberia	...	...	50	
Korunjoly	...	...	150	Sooltanpore	...	...	70	
Oroonnugger	...	...	100	Modhoosoodunpore	...	...	60	
Buttolla and Chittamaree		...	200	Kharee	...	...	400	
Kansareer Chuck	...	...	250	Chandbasa	...	...	100	
Ghosin Abad	...	...	150	Kasseenugger	...	...	100	
Tengerabeechee	...	...	45	Arjoontolla	...	...	25	
Damoodhurpore	...	...	90	Pooramderpore	...	...	60	
Mawleergram	...	...	24	Kowtolla	...	...	40	
Allypara	...	...	125	Gopalnugger	...	...	150	
Haskee	...	...	70	Moheshpore	...	...	50	
Koosfull	...	...	125	Pookheria	...	...	90	
Dholla Krishnanugger	...	...	200	Banshberia	...	...	40	
Joggodishpore	...	...	150	Motilall	...	...	100	
Ramdebpore	...	...	90	Kallikapore	...	...	70	
Harishpore	...	...	50	Mowraltolla	...	...	40	
Wooloodanree	...	...	100	Dhannunjoypore	...	...	80	
Chundeepore	...	...	50	Krishtodebpore	...	...	90	
Doyarampore	...	...	90	Mullickpore	...	...	80	
Gazeepore	...	...	125	Depay Protima	...	...	80	
Usuttobenia and Dowlatabad		...	50	Ghuttockpore	...	...	80	
Khurdohoibutpore	...	...	15	Chowghoree	...	...	90	
Krishtodullubpore	...	...	100	Goomkee	...	...	90	
Roypore	...	...	100	Banichapra	...	...	100	
Sreenugger	...	...	40	Mundubtolla	...	...	40	
Ramkrishtopore	...	...	200	Harindangah	...	...	30	
Maenapore	...	...	45	Anchna	...	...	90	

DIAMOND HARBOUR.
Baboo H. C. Kerr.
Mortality.

STATION SOOLTANPORE—*continued.*

Naknan	...	...	135	Biddadhurpore	...	..	125
Enathpore	...	...	100	Dookalpore	...	...	200
Sreekrishtonugger	...	...	22	Badaybullulpore	...	...	30
Ramesherpore	...	...	50	Bullulpore	...	...	90
Pathpookheria	...	...	22	Dullulpore	...	..	60
Doorgapore	...	...	60	Dadpore	...	.	90
Bhuggobanpore	...	...	100	Krishtopore	...	...	50

STATION DABEEPORE.

Pathpookheria and Patkelbaria	...	...	240	Japherpore	...	...	40
Buttolla	...	...	20	Burghur	...	...	50
Monshar Haut	...	...	30	Digra Bhuggobanpore	...	..	90
Jhingah	...	...	90	Jhoomnah	...	...	25
Narainpore	...	...	25	Hurrishpore and Shola		...	40
Woolkoonee	...	...	40	Daooly	...	...	60
Kodaliah	...	...	25	Govindpore	...	...	250
Dowlatpore	...	...	50	Sookhdebpore	...	...	60
Boyaree	...	...	15	Chunarbar	...	...	50
Bosudebpore	...	...	125	Kasseerampore	...	...	125
Balirdanree and Jangaliah		...	40	Kowkhally and Bhowanipore		...	80
Debeepore and Ramghur		...	15	Nowbhashan and Gowalbaree		...	100
Boichberia	...	..	100	Egarogorag	...	...	250
Ghuneshampore	...	...	60	Ghorahatta	...	...	150
Burnugger	...	...	100				

STATION BANKIPORE.

Soondipookheria	...	...	40	Hashoory	...	...	150
Gocoolnugger	...	...	60	Meerzapore	...	...	60
Hattolla	...	...	100	Jeypore	...	...	40
Bangaberia	...	...	200	Chackdoha	...	...	150
Choetunnapore	...	...	250	Puddopookheria	...	...	200
Augulmoheshpore	...	...	25	Bagdanree	...	...	250
Mooldiah	...	...	40	Kankooapara and Rungilabaz		...	80
Bhowanipore	...	...	100	Ghurkhally and Shibpore		...	50
Odeypore	...	...	200	Chinguakhally	...	...	100
Chandpore	...	...	350	Shapmara	...	...	100
Kadipookheria	...	...	300	Wooter Mohishdauree	...	...	125
Surradana	...	...	350	Dhuckin ditto	...	...	150
Chowkeetolla	...	...	250	Brishogatchee	...	...	50
Luckheekantpore	...	...	200	Surisapara	...	...	100
Hurrypore	...	...	60	Jaugeerghur	...	...	150
Berayshurpore	...	...	300	Shalpookheria	...	..	100
Koosulpore	...	...	200	Hezul Haut	...	...	80
Mocoondapore	...	...	60	Aubtawoolee	...	...	150
Porankhally and Halnugger		...	250	Bishtoopore	...	...	100
Sonatollah	...	...	60	Baley	...	...	150
Bankipore	...	...	40	Banesherpore	...	...	200
Mietollah	...	...	50	Ghola	...	...	200
Dhonepotta	...	...	250	Burgatchee	...	...	100
Ugrodanee	...	...	100	Russadagatchee	...	...	80
Banshpallah	...	...	100	Woostee	...	...	200
Barropow	...	...	200	Noenan	...	...	150
Bamna	...	...	200	Rajar Haut and Noenan		..	100
Jowaroo	...	...	70	Chuck Deboo Ghose	...	..	60
Gorooejola	...	...	200	Hatooriah	...	...	150
Kanballv	...	...	100	Hautkhola	...	...	60
Shiboopore	...	...	200	Chuckhatooria	...	...	250
Sekunderpore	...	...	300	Earpore	...	..	250
Nilkuntpore	...	...	200	Chuckroypore	...	...	100
Tekpanja	...	...	500	Moheshura and Tengrakhalee		..	60
Toolan	..	...	150	Rajapore	...	...	60

STATION BANKIPORE—*continued.*

Sungrampore	...	...	...	100	Rajapore, Chandpore and Nilkoosee	...	1,550
Conecha	...	...	...	40	Mugra	...	70
Khanpore	...	...	...	80	Dhora	...	80
Enathpore	...	...	...	60	Ektara	...	125
Jalghurah	...	...	...	80	Surberiah	...	25
Mullarchuck	...	...	...	50	Dolooepore	...	35
Colus	...	...	...	40	Bongong	...	50
Soepera	...	...	...	60			

STATION GOBINDPORE.

Maluncha	...	...	...	70	Ramgobindpore	...	40
Umbulhaura	...	...	...	125	Parbuttypore	...	15
Mokoondapore	...	...	...	50	Pathra	...	30
Shaothdoha	...	...	...	80	Daripathra	...	50
Moynan	...	...	...	30	Mollapookhoria	...	20
Dagoriah	...	...	...	80	Chandnugger	...	20
Bahoorganga	...	...	...	50	Mohunpore	...	80
Boray	...	...	...	30	Bussuntapore	...	40
Naraoneepore	...	...	...	70	Majeer Haut	...	10
Gowreepore	...	...	...	30	Jafrallee	...	15
Caupore	...	...	...	25	Akhrapoonjo	...	80
Hatigunge	...	...	...	15	Andariah	...	25
Bardun	...	...	...	90	Reckha	...	25
Bursagoria	...	...	...	25	Roypore	...	10
Gurghatta	...	...	...	25	Kamarpole	...	30
Abdanpore	...	...	...	40	Bagdaha	...	40
Paroolia	...	...	...	50	Doorgapore	...	10
Debeepore	...	...	...	25	Agneeshur	...	30
Beloorbada	...	...	...	25	Sungrampore	...	40
Singberia	...	...	...	30	Coolayshur	...	30
Panchgong	...	...	...	70	Mushaut	...	25
Bhowanipore	...	...	...	30	Chengrah	...	10
Kullagatcheeah	...	.	...	10	Nausut	...	20
Koosheria	...	...	...	15	Nagra	...	20
Maloor	...	...	...	125	Nowbashan	...	40
Kontikaree	...	...	...	50	Narayantallah	...	80
Jhawoodhauri	..	...	...	80	Khamarcoor	...	20
Pitamburra	...	...	...	25	Patdoha	...	15
Bhoosnay	...	...	...	7	Chundeepore	...	15
Surisa	...	...	...	80	Bangala	...	40
Morigatchee	...	...	...	100	Hinchaberia	...	2
Kanipore	...	...	...	15	Panchshut	...	5
Garooarah	...	...	...	15	Mohishgote	...	5
Dearuck	...	...	...	25	Jhinga	...	73
Satghurrah	...	...	...	25			
Ghantoo	...	...	...	15	289		26,151
Bhogpoonjo	...	...	...	30			

It appears that in the month of January 1868 the disease, commonly called the *Gootee* or *Bussunto*, made its appearance in the village of Bansburia, Pergunnah Shahapore, Police Station Sooltanpore, where, shortly before the appearance of the disease, people had brought a few bullocks from the Oolooburia Haut, situated on the other side of the river, where every week a very large number of cattle, mostly from Midnapore and Orissa, are sold, and it is believed that these animals brought the disease with them. From this village the murrain travelled in a south-westerly direction, and attacked some of the cattle in the village of Luckhipore. It then took the southerly direction and went to the village Bosar, and thence travelled to the west side, making its appearance at Belpookhoria. It subsequently attacked the villages of Culpee, Ramessorpore, Kharee, Poorandarpore, Howree, and its neighbouring places, and then broke out on all sides. The murrain was at its height in the month of July and August last, at the latter end of which month it began to abate, and continued abating till it almost disappeared at the latter end of October or the commencement of November last. The villagers believed the disease to be contagious; yet with this knowledge they had

Origin of disease.

Spread.

DIAMOND HARBOUR. Effect on cultivation.

no means of separating the healthy from the sick cattle. They had no place, and they were at the time all anxiety for their paddy fields. The energy displayed by the ryots at this critical time was something wonderful.

Those who could afford and those who could not afford it borrowed money and purchased cattle and ploughed their fields, and when the first batch died, they got a second batch, and in some places even a third batch was procured for the completion of the sowings.

With all this endeavour on the part of the tenantry, a good one-fourth portion of the paddy lands remained untilled for want of cattle.

I have already mentioned that the murrain was most severe in July and August last, and this circumstance is attributable to the bad grass which had rotted after the continued rains of June last, and which was devoured by the hungry bullocks that had no opportunity of grazing for nearly 20 or 25 days in consequence of the flood. In the jurisdiction of Thannah Bankipore, where the low *boonani* fields form nearly a twelve-anna portion of the rice lands, the people finding all their crops gone and the fields submerged in water, commenced selling off their cattle at rather low prices, and the ryots of Sooltanpore, Hotigunge, and other places, not similarly situated, began to buy them, and therewith ploughed their fields. The value of these cattle ranged from 5 to 15 rupees a head.

Symptoms.

The majority of the animals that died in the plague were oxen, called by the people *Damragoroo*, and these form the majority of the horned cattle here. The symptoms of the disease were not the same in all places. In and about Kharee, an ox attacked by the murrain would pass watery stools, cough violently, and salivate, and then die after six or eight days. Towards Culpee and the adjacent hamlets the symptoms were quite different. Here the cattle would at first cough, and a sort of shivering would come upon them; they would then water from the mouth, eyes, and nose. Pustules would then make their appearance upon the body, and the sick cattle would pass watery stools, which had the appearance of being mixed with blood and pus. The cattle would then feel disinclined to get up, and gradually sink within five to ten days from the date of attack. In all the afflicted villages the sick cattle would refuse food from beginning to end. Those which would commence eating *Kolmee sak* and soft grass mixed with *ghee*, which the people were invariably in the habit of placing before them, and those which had large pustules on them often recovered, but these, unfortunately, were few.

In this part of the country the oldest man does not recollect the occurrence of a like scourge; but I have been informed that there were now and then *Goutees* amongst cattle, which had to a certain extent proved destructive.

From A. SMITH, Esq., *Magistrate of the* 24-*Pergunnahs, to the Commissioner of the Presidency Division,*—(*No.* 162, *dated Alipore, the* 20*th April* 1869.)

A. Smith, Esq.

Referring to your No. 230, dated the 3rd instant, I beg to transmit herewith a copy of Veterinary Surgeon Farrell's report of his operations in the Diamond Harbour Sub-division, and of a review of the same by Baboo Hem Chunder Kerr, who was in charge of the Diamond Harbour Sub-division while the operations were in progress.

2. It will be seen that the total loss of cattle from the plague was about 26,151 head.

3. Baboo Hem Chunder Kerr is of opinion that the epizootic originated with the importation of some cattle from the Oolooburia fair. I have not heard that disease has prevailed on the other side of the river, but the fact seems established that it broke out on this side in a village to which importation was made. Dr. Farrell assigns a later period and a different village to the origin of the outbreak. In this as well as with reference to the early course of the epizootic, I think that Baboo Hem Chunder Kerr, who was in charge of the Sub-division and obtained his information at the time, must be accepted as more reliable than Dr. Farrell, whose account is necessarily based on the information he collected from villagers, few of whom probably knew much beyond what occurred in their own immediate neighbourhood.

4. The disease does not appear to have been very amenable to treatment, though even in the cases where medicine was given, a fair proportion of cures is shown. Greater benefit appears to have resulted from the measures taken for isolating the diseased cattle and preventing the spread of the contagion.

5. The testimony borne by the Sub-divisional Officer to the zeal and assiduity with which Dr. Farrell discharged the duties entrusted to him, and the ready attention he paid to the representations of the people, is very gratifying.

6. As explained in a previous letter, the delay in the submission of this report is due to the delay with which, notwithstanding repeated reminders, it was obtained from Dr. Farrell. The report is not dated, but it was received in this Office on the 25th March.

7. It was then sent to Baboo Hem Chunder Kerr for his review, which reached me on the 14th instant. DIAMOND HARBOUR. A. Smith, Esq.

8. Dr. Farrell's report contains his own explanation of the delay. I fear I must pronounce it altogether insufficient and unsatisfactory.

9. I submit with these papers a further letter, dated 20th March, from Dr. Farrell, in which he suggests the institution at the Presidency of a Veterinary School for the instruction of Salootries, Farriers, and all others who may choose to learn the Veterinary art, as applied to horses and cattle. The suggestion is deserving of consideration, not only with reference to the provision of a class of skilled practitioners for practice among agricultural cattle, but also as a means of training a better subordinate agency for the cure and treatment of Government cattle. Veterinary School.

From HIRAM FARRELL, Esq., *Veterinary Surgeon, Her Majesty's Bengal Army, on Special duty, to* BABOO HEM CHUNDER KERR, *Deputy Magistrate, Sub-divisional Head Quarters, Diamond Harbour.*

Agreeably to Presidency Division Orders, dated 5th August 1868, placing my services at the disposal of the Government of Bengal, I waited on the Commissioner, 24-Pergunnahs Division, and received instructions to proceed to Diamond Harbour, the Sub-divisional Head-Quarters, to investigate the cattle disease that was said to be raging in that district. Having provided myself with medicines and other necessaries, I reported my arrival to the Deputy Magistrate on the 8th August 1868. I there learnt that the disease was at its height in the Sooltanpore District, some fourteen miles off. H. Farrell, Esq.

2. From the boisterous state of the weather no boat could be got to venture out, and as the roads were impassable from heavy inundation, I was delayed some ten days before I could proceed to Sooltanpore. In the meantime I visited the villages in the vicinity of Diamond Harbour where the disease had begun to make its appearance. On the 18th I reached the Sooltanpore District, and having made Culpee my head quarters, I proceeded to visit the neighbouring villages.

3. In the course of my inquiries I learnt that the disease, commonly called Gootee, first appeared in the village of Deolalpore in the Sooltanpore District, and from thence extended over the surrounding country; a few days afterwards it was discovered in the Bankipore District. It was first noticed in the month of May, and was most fatal during the months of August, September and October; about the end of November all trace of the disease had disappeared. I append a map in which the course of the disease is marked in red. Origin.

4. In the course of seven days I visited most of the villages to which the disease had spread, and having personally witnessed the nature and extent of its ravages, and given instructions for the sanitary arrangements that could be immediately carried out, I proceeded to make the necessary preparations for aiding the cattle owners, in curing the diseased animals, preventing the spread of the disease, and putting an entire stop, if possible, to its further spread.

5. The natives were terror-stricken at the great loss and ravages of the disease, and not properly understanding the cause of my appearance in the district, they were not then inclined to attend to instructions, but being very intimate with their character, their customs, and superstitions, especially in cases of the kind, and having a very good knowledge of the language, I used quiet persuasion in allaying their fears and working on their feelings, so that at a very early stage of my proceedings they attended to me willingly. I there secured the services of one Jemadar and four Salootries, men who had already some knowledge of treating cattle. I instructed these men in the nature, symptoms, and treatment of the disease, and posted them at different points throughout the district with medicines, &c., and careful instructions for attendance on, and treatment of, the animals within the portion of district allotted to each. Losses.

6. I likewise had circulars printed in Bengalee, containing full particulars for treatment and sanitary arrangements; these were distributed throughout the district with the most happy, beneficial, and, I may say, wonderful effect, not only on the diseased animals, but on the minds of the Natives, who were convinced that their good alone was sought, and that it was possible by attention and care to check the epizootic; the result was very satisfactory, for success attended the operations, and in the course of two weeks the mortality was reduced from over 800 a week to less than 300. Measures adopted.

7. From the most careful enquiries throughout the district, and from conversation with all classes of the community, it is evident that the disease is not new in the part of the country south of Calcutta, and that it is of periodical occurrence, appearing here and there every year, but generally the cases were in some years so few, previous to the present epizootic, as not to attract public attention; in fact, it dates back for a series of years, far beyond the memory of the oldest people: some fifteen or twenty years ago it appears to have caused great mortality. I could however find no records on the subject. History.

DIAMOND HARBOUR. H. Farrell, Esq.

8. Some curious facts are worthy of notice in connection with the cattle epizootic. It continued its course to the Diamond Harbour Creek, where it appears that the stream of water checked its progress, and it ran along the right bank of the creek without crossing it, throughout the continuation of the epizootic; and again the disease was of a more virulent type, and more fatal in all the villages on the banks of the creek than those some distance from it. The symptoms were much more aggravated, and there were very few recoveries, the animal affected dying off within 48 hours of being attacked; this was especially the case in the village of Raipore, where a week after the disease appeared all the cattle in the village were exterminated.

Causes.

9. I conclude from the fact of the disease being constantly present in all months and seasons in the district, sometimes destroying many, and at other times few, that it is of spontaneous origin, no trace of its importation from other countries can be discovered. The specific poison appears to find a habitation in the soil, caused doubtless by the want of proper drainage, the stagnant pools, unusual falls of rain, and, as was the case last season, inundations over the whole country; these and the decomposition of vegetable and animal matter make a combination of agencies sufficient to develop disease, and once developed, it is propagated by immutable laws that govern all contagious diseases; the animals do not inherit the disease, nor do they carry it about in their flesh and blood, but, as I have stated, certain conditions of the soil and atmosphere are favourable to its development, especially where cattle are congregated in any large numbers.

Neglect of cattle.

10. There are also other causes which help to engender disease; there is great neglect in the management and care of cattle; they are ill-fed as a rule, allowed to graze on pastures that are rank and have been under water; they are crowded together in miserable dirty huts, without ventilation or cleanliness; in many cases families and cattle are under one shed, the latter quite uncared for after the day's work, generally the cultivation of paddy, which necessitates their working in water and mud far above their knees; they have little food, but what they can pick up; when the paddy is cut, the coarse straw is given to the animals in small quantities; they are scarcely ever attended to, dried or cleaned: these causes dispose the cattle to disease. Again, no attention whatever is paid to the breeding of cattle; they are nearly all small, weak, and overworked: numbers are brought from the Midnapore District annually. I think the above facts will prove that there are ordinarily sufficient exciting and predisposing causes to produce disease in the district at all times and seasons: the only wonder is that epizootics are not more common.

Carcasses.

11. Another point that deserves attention is the exposure of all dead bodies of animals—they are thrown near villages into the nearest ditch or khall; in most of the villages I found bodies in every stage of decomposition not fifty yards from the huts, and when the frightful mortality that has taken place this year is considered, alike injurious to the health of the inhabitants and of their cattle, and to the cultivation of their fields from deficient plough and draught bullocks, who can doubt the advisability of establishing such sanitary arrangements as may in future have some check on the spread of disease, or prevent similar epizootics altogether.

Disinfection, burial.

12. Free use was made of lime and other disinfectants to purify the various places, and I made every endeavour, with the aid of the Police, which was freely given, to put a stop to the practice of leaving the dead bodies of animals exposed: from some caste prejudice, which on enquiry was found to be untenable, there was at first great difficulty in inducing the villagers to attend to my advice and instructions in the matter, but by perseverance and persuasion the prejudice was happily overcome.

Hides.

13. I found that the Chamars and other low caste people were in the habit of removing the skins of the deceased animals for sale in the Calcutta market, where they obtained good prices, and must have made great profit, for numbers of skins where thus removed, spreading the disease far and wide, and causing much mischief and loss, for the disease is prevalent in many parts of Calcutta, Entally and the suburbs. To put a stop to the practice of removing the skins, I sought your assistance to have the skins scored and rendered useless for sale, and I could not have a better opportunity than the present for noticing the active and willing aid given to me in every instance of appeal. I received the most cordial counsel and succour on all occasions.

14. Having thus given a summary of my proceedings from the latter end of August to the beginning of January, I will briefly narrate the nature, symptoms, and appearance of the disease, with the particulars of the measures taken for its prevention, &c., &c.

NATURE OF THE DISEASE.

Nature of disease.

It is known in the district by the name of "Gootee" and "Bushunto," literally small-pox. It is, in my opinion, the Rinderpest or Murrain of the Russian Steppes, a low malignant fever of typhoid type, capable of being propagated by inoculation, and similar

to the variola of human beings: it is highly infectious and contagious, the virus can be transmitted in several ways: the excrement which drops from a diseased animal is highly charged with the poison; food taken in the mouth or breathed upon, ifeaten by a sound animal, will produce the disease; discharges from the nose, eyes, and mouth on pasture will give it; flies and dogs by feasting on diseased carcasses will disseminate it: in fact, the very air in the neighbourhood of cattle sheds with infected animals is poisoned.

15. The popular opinion throughout the district, and what the inhabitants implicitly believe, is that once an animal is attacked by *Gootee* and recovers, it becomes free from the disease, and never takes it again; but my experience does not confirm this belief, for, in the case of a few experiments in inoculation which produced the disease, two animals recovered and again became diseased from contact with others affected: the second attack is however much milder than the first. I am also convinced, from observation and inquiry, that the majority of the recovered animals at the period reported on had the disease at some previous period.

SYMPTOMS.

Symptoms.

16. I will divide the disease into four stages.

First, Incubative; second, Premonitory; third, Febrile; fourth, Dysenteric.

The first, or *Incubative*, lasts from four to ten days, and is marked by a high degree of temperature of body and rapid pulse. The second, or *Premonitory*, is noticed by great dulness; the animal stands aloof, with its head drooping, coat staring. Cows lose their milk gradually, the urine becomes scanty and bowels costive, pulse increases, visible mucous membranes become affected, rumination is suspended, but the animal will eat food offered to it; this stage continues from forty-eight hours to four days, and is succeeded by the third or *Febrile* stage, in which the body is warm, pulse fluttering and weak, animalr efuses all food, has great thirst, will run to any pool of water; running at the nose and eyes, slobbering at the mouth, great debility, and urine scanty and high colored, and often voided: diarrhœa sets in—a scouring of fœtid green fæces; the breath and exhalations from skin fœtid; rumination is suddenly and completely suspended; there are spasmodic twitchings of the muscles, of the neck, flank and hind-quarters, and the skin becomes rough by the elevation of the hair.

This stage lasts from forty-eight hours to five days; during its latter part, the body undergoes alternate changes of cold and heat, the pulse is thin and wiry, breathing heavy and laboured; the expirations become double and are emitted with a peculiar grunt; there is difficulty of deglutition; cough sometimes is present; vesicles appear in the mouth, and skin inside of thighs and axillas cracks, from which a watery discharge exudes; body is also covered with small vesicles resembling pimples, the roots of the hair evidently being their seat, and the animal is often affected by tympanitis and slight colicky pains.

17. The fourth stage, *Dysenteria*, is marked by a change in the constitutional symptoms; alvine evacuations being less, but with streaks of blood and slime, very fœtid; tenesmus, urine high colored, scanty and offensive; pulse very weak, barely perceptible; body and extremities become cold; fever disappears, leaving great prostration; the discharges from the nose and eyes are very purulent; the vesicles in the mouth are filled with pus, and most of them burst; those on the body become ulcerated, dry, and covered with scales; the glands and throat swell, and there is a difficulty of breathing; the muscles have slight spasms, and the animal from the beginning of the stage falls down and lies with its head and neck stretched out.

18. The symptoms increase to the eighth or ninth day, when the crisis is observed; as death approaches the mucous membranes become of a livid hue; there is extreme fœtor of all discharges, the evacuations come away involuntarily, the muscular twitchings cease, and the animal dies without a move. When the case takes a favorable turn, the pulse is lower, the temperature of the body and extremities is equable, the appetite returns, and in fifteen to twenty days the animal recovers its health. I have invariably found that the greater the amount of eruption the more favorable was the case.

Results.

Cases reported and attended to	...	...	6,735
Ditto cured	...	...	1,808—26·9 per cent.
Ditto died	...	...	4,927—73·1 per cent.

POST-MORTEM APPEARANCES.

Post-mortem appearances.

Decomposition rapidly ensues after death, and the mucous membranes of the mouth, larynx, pharynx, œsophagus, trachea, appear inflamed, with patches of ulceration and ecchymosis, with considerable effusion of serum, in the thoracic and peritoneal cavities, the

DIAMOND HARBOUR. H. Farrell, Esq. Treatment.

lining membrane of the first three stomachs "slightly congested," the membranes of the fourth stomach and small intestine, more especially the ileum, ulcerated, and in some gangrenous; the large intestines healthy, the contents fluid, of an offensive odour; lungs in most cases slightly congested; heart flaccid, but healthy; spleen and liver in some cases enlarged and congested; kidneys healthy; the organs of generation inflamed with ulcerated patches and ecchymosis. The brain in most cases healthy, sometimes the membranes and substance injected, and ventricles filled with a yellow colored serum; spinal cord healthy, and in some cases injected with deposit of serum about the lumbar region; blood black and watery, does not coagulate readily or produce a buffy coat; inhalation of the vapour of the blood will produce fever and diarrhœa in man with violent nervous headache.

TREATMENT.

There is no drug that is really a specific for the disease, nor can it be counteracted by any known antidote; the disease is essentially one in which prevention is far better than any attempt at cure; careful attention to sanitary arrangements, to the comfort and care of the animals, with good hygienic management, will be found of much more value in dealing with an outbreak of cattle plague than trusting to medicinal agents.

19. I will now proceed to give a detail of the treatment adopted by me, premising that the drugs, &c., used are simple, safe and economical, easily procurable throughout the country, and generally known to the ryots. In the first stages when constipation is present—

Common salt	...	...	...	1 pound
Ginger	...	...	...	4 drachms
Rice water	...	...	...	4 pounds

repeated every twelve hours until scouring is produced, then as the disease is weakening and the vital powers sink rapidly, stimulants must be used. I found rum the best remedy in ounce doses, and native spirit in two-ounce doses, to be very useful, when the febrile action is lowered.

Antimony	...	...	...	2 drachms
Nitre	...	...	...	2 ounces
Black salt	...	...	...	4 drachms
		or		
Camphor	...	...	...	4 drachms
Bhung	...	...	...	2 ounces
Cherata	...	...	...	1 ounce

given twice or three times a day to control excessive diarrhœa, dysentery, and straining; to the above was added, in some cases, catechu 4 drachms, in others opium 1 drachm; when tympanitis was present, blisters were applied to the sides of the abdomen, and given internally

Assafœtida	...	...	...	2 drachms
Bhung	...	...	...	4 „
Ginger	...	...	...	4 „

When convalescence took place

Sulphate of Iron (kussees)	...	...	2 drachms
Bhung or Cherata	...	...	2 ounces

given for three or four days and found of the greatest benefit: the bhung and cherata were also used in the form of a decoction; the doses above mentioned are for the drugs when used as such. The decoction is thus made—

Bhung or Cherata	...	...	1 pound
Water	...	...	16 pounds

boil for half an hour; and strain for use when cold.

Sanitary measures.

20. An animal when taken ill was separated from the healthy animals, and when possible removed to another shed. This in most cases was impossible, when it became necessary to place the animal in one side of the shed with a fire in the centre kept burning night and day; all the droppings, &c., were put on the fire, and sulphur sprinkled over it, three times a day, to promote fumigation. The animals were also made to inhale the fumes of sulphur twice a day, which was found to be of the greatest benefit. The occasional use of fires and fumigations in the cattle sheds throughout the district, with doses of medicine now and then to the animal of two drachms of black salt, or four drachms of common soda, known by the inhabitants as "Kharee Neemuck," is to be recommended as a prophylactic measure.

FOOD.

The disease being of a very weakening nature, the sick animals were drenched several times a day with rice or suttoo water; or, in their absence, with water acidulated with vinegar, or gruel made of bran or linseed; when convalescent, nourishing and easily digested food was given, such as green grass, or mashes made with the siftings of rice; and in addition to the food, attention was paid to the cleanliness of animals and sheds: the wood-work of the latter was washed with warm water, the old earth of floors removed, and new earth sprinkled with lime put down to replace the old, and in several cases the sheds were entirely destroyed by fire with the permission of the owners. Some villages were placed in quarantine, and all connection between them and healthy places prohibited, a measure that would be of the greatest benefit at the first outbreak of cattle plague: this matter is certainly worthy of the grave attention of the authorities, and perhaps it would be worth while to have periodical professional visits made to the chief towns and their neighbourhood, of the Bengal Government, for the purpose of ascertaining the condition of the cattle kept by the ryots for agricultural and other uses: the result of such visits would very possibly far more than repay any expense that would attend them, in the improved condition of the animals on which good agriculture so much depends, in the quality and quantity of milk for food, and in removing from the minds of the poor inhabitants the dread and its consequences (alike injurious to the poor people, their landlords, and to the Government), which overcomes them on the loss of cattle and injury to crops, &c., which surely follow in the train of such disease when it comes on suddenly and generally. DIAMOND HARBOUR. H. Farrell, Esq. Food.

21. I cannot close my report without apologizing for the delay which has apparently taken place in submitting it, owing to the loss of many of my notes and the difficulty of bringing to remembrance the many particulars connected with my visit to the villages in the district.

I await orders for my future movements.

From H. FARRELL, Esq., *Veterinary Surgeon, Her Majesty's Bengal Army, to the Magistrate and Collector, 24-Pergunnahs,—(dated Calcutta, the 20th March* 1869).

In continuation of my report, submitted in February last, to the address of the Deputy Magistrate, Diamond Harbour, I do myself the honor to invite the consideration of the authorities to the advisability of establishing a Veterinary School in Calcutta for the instruction of Native Salootries, Farriers, and all others who may choose to learn the veterinary art, as applied to horses and cattle; very few persons will be found at present who really understand the proper treatment and management of horses and cattle, either in health or disease. I have been long impressed with this fact, from intercourse with the Salootries of Native Irregular Cavalry Regiments, and also with European Farriers in Batteries, &c., entrusted with the care of horses; these men obtain a sort of superficial knowledge of disease from practice, but are almost totally ignorant of the anatomy and physiology of the animal they are treating. Would it not therefore be a great benefit to instruct such Government servants by a course of lectures, dissection, and clinical demonstration? Such a school or schools would be of immense benefit to every mounted branch of the service, especially the Irregular Branch, who are almost entirely dependent on their Native Salootries, and doubtless civilians and others in and out of Government employ would take advantage of any establishment of the kind that would be the means of imparting to them knowledge that is so much wanted in India. I had the advantage of acting as Demonstrator at the Edinburgh Veterinary College for a session before entering the service, by which I gained a fair knowledge of most matters connected with veterinary science, especially tuition: and am prepared to go further with the subject of the proposed school in respect of the course of study and other particulars connected therewith if considered necessary, and to show that the expense of its institution would be little more at first than the cost of a suitable building, while the commensurate advantages would in time far exceed any expense or trouble that can possibly be incurred; in time indeed the establishment would be self-supporting. Veterinary School.

I send this communication direct to prevent delay, as it may be deemed necessary to review it in connection with my communication regarding the cattle disease which prevailed to the south of Calcutta in the latter part of 1868.

From BABOO HEM CHUNDER KERR, *Deputy Magistrate, to the Magistrate and Collector, 24-Pergunnahs,—(No. 1, dated Alipore, the 14th April* 1869). Baboo Hem Chunder Kerr.

With reference to your note on Dr. Farrell's report on the cattle disease that lately raged in the Diamond Harbour Sub-division, I have the honor to submit the following remarks. Discrepancies.

DIAMOND HARBOUR. Baboo Hem Chunder Kerr.

2. In the first part of his report Dr. Farrell gives a summary of his proceedings and of the history of the disease; in the second he describes the symptoms of the disease; in the third, its treatment; and in the fourth, the food most appropriate for cattle during illness, and the sanitary measures to be adopted during the prevalence of the murrain.

Origin and spread.

3. As regards the history of the disease, Dr. Farrell is mistaken in saying that it first broke out at Dulalpore in May. On referring to my annual general report No. 43, of date the 1st February last, you will perceive that the disease was brought over from the other side of the river so early as January 1868. Some ryots of Bansberia, Purgunnah Shahapore, purchased a few head of cattle at the Oolooberia hât, where a large number of cows and bullocks from Midnapore and Orissa are weekly sold, and these, it is believed, brought the seeds of the disease with them, for it was immediately after their arrival that the disease broke out at Bansberia. From Bansberia the murrain travelled in a south-westerly direction and attacked a number of cattle in the village of Luckhipore. It then took a southerly direction and appeared in the village of Bosar. Thence it extended on the one side attacking successively Belpukhurree, Culpee, Ramessurpore, &c., to the west, and on the other to Khari, Poorundropore and the neighbouring villages to the east. Its subsequent course I cannot correctly trace, as it spread very rapidly and became general nearly all over the Sub-division.

4. Dr. Farrell thinks (paragraph 8) that the course of the disease was checked by the Diamond Harbour Creek. This may have been the case, but I find that the disease prevailed on both sides of the creek with almost equal virulence, and proved as fatal on the sides of rivers and creeks as in villages far removed from water-courses. It is also certain that it crossed several channels of water in its course.

Neglect of cattle.

5. I have no doubt that the causes noticed by Dr. Farrell (paragraph 9) had a great deal to do in bringing on the murrain in the southern parts of the 24-Purgunnahs; for none can deny, and it is a truism, that defective sanitary arrangements, privation and neglect, lead to disease; but it must be borne in mind that the disease under notice is common all over Bengal, and is not unknown in the North-Western Provinces, and that its ravages are neither enhanced by rank vegetation and damp soil, nor mitigated by high dry land and clean pastures. In Burdwan, Bancoorah, Hazareebaugh and Beerbhoom, places noted for their high, dry, and well drained soil, the disease is often as severe as it has ever been on the damp, low, alluvion of the 24-Purgunnahs. It may be also remarked that generally it breaks out with the greatest virulence in the months of February, March, and April, and altogether disappears in the rainy season. It is true that at Diamond Harbour its severity was at its height in July, August, and September, but even there it first broke out in January. It may also be noticed that the floods which submerged a great part of the Diamond Harbour Sub-division in June last, and deprived the cattle of their natural food for three or four weeks, and then offered them a rank unhealthy vegetation for fodder, contributed much to render the murrain much more fatal than it usually is in this part of the country.

6. As regards the purely professional part of Dr. Farrell's report, I can offer no remark. But I have much pleasure in bearing my testimony to the zeal and assiduity with which he attended to the onerous duty which was entrusted to him, and the ready attention he paid to the representation of the people.

7. His treatment, I must own, did not prove very efficacious, and the death-rate, according to his own showing, exceeded 60 per cent. But the disease (gootee), like cholera, is one for which I believe no effectual remedy has yet been discovered.

Mortality.

8. Of the number of cattle carried away by the disease, I have already submitted a statement along with my last annual general report. A copy of it I hereto annex for ready reference. It shows a total of 26,151 head of cattle, which, at an average of Rs. 10 per head, would represent a loss of Rs. 2,61,510; nor was this all, the mortality among the cattle having been at its height during the season of paddy cultivation, the ryots were obliged, from want of cattle labor, to leave about one-fourth of their fields uncultivated, and the loss to them from this source amounted at the lowest calculation to over two lacs of Rupees. Some of the ryots replaced their lost cattle two or three times successively, but unfortunately the disease which was then raging swept away the newly purchased batches, and the cultivators were ultimately obliged to leave their lands fallow.

A. Smith, Esq.

From A. SMITH, Esq., *Magistrate of the 24-Pergunnahs, to the Commissioner of the Presidency Division,—(No.* 183, *dated Alipore, the 7th May* 1869).

With reference to your No. 292, dated the 27th April, the epidemic broke out in January, though it was not reported as especially virulent till June.

2. The weekly reports were got from the Police, and are only for a part of the time, besides which they are not, I fear, very trustworthy. DIAMOND HARBOUR. A. Smith, Esq.

3. Baboo Hem Chunder Kerr informs me that his estimate, as given in his letter under notice, was based upon inquiries made from the chief zemindars, and ascertained by an agent deputed from village to village for the purpose.

4. Dr. Farrell's figures refer to deaths from the cases reported and treated.

5. No official action was taken until the report from Sooltanpore in July. I had heard previously that deaths were very numerous among the cattle, but they were attributed to starvation, no food being available, owing to the extreme height of the inundation, and so not capable of any remedy.

6. The Deputy Magistrate's annual report is herewith forwarded for perusal and return.

From BABOO HEM CHUNDER KERR, *Deputy Magistrate, 24-Pergunnahs, to the Magistrate of 24-Pergunnahs,—(dated Alipore, the 3rd May* 1869.) Baboo Hem Chunder Kerr.

With reference to the letter No. 292 of the 27th ultimo, from the Commissioner of the Presidency Division, to your address, I have the honor to state that the figures showing the number of deaths caused by the murrain in the Diamond Harbour Sub-division during the past year, must of necessity be in excess of the figures given in my weekly returns and in Mr. Farrell's final report.

It has already been brought to your notice that the plague made its appearance and commenced its havoc in January 1868. The Veterinary Surgeon was deputed only in August last, and he remained on the field of his labor, I believe, till November, or the early part of December following. His figures therefore can never tally with those given by me. It will be seen that both the weekly returns which began to be submitted either at the end of July or the commencement of August, and Dr. Farrell's statement, do not embrace the whole year during which the plague was raging.

I joined the sub-division about the middle of January 1868, and some two or three months afterwards (I write from memory) I heard of the outbreak of small-pox amongst the cattle. I then commenced instituting inquiries, and these inquiries were being made when your No. 39 of the 7th July last was received. On the following day I was on the scene of the plague, and on the 9th submitted my first report in the matter. I then stated that the murrain had broken out in Chytro or March, but subsequently I learnt that it had spread in January last.

In the beginning of the present year I deputed a man well acquainted with the country to all the villages affected, in order to ascertain the number of cattle that had been carried off by the pestilence. I got my figures by this means.

Note on the Mortality in 24-Pergunnahs District during the year 1869.

The Officiating Commissioner of the Presidency Division, in two letters, dated respectively 3rd June and 14th July 1869, and embracing a period from 1st May to 19th June 1869, reports that 355 deaths among cattle took place in the Diamond Harbour Sub-division. Disease in 1869.

Mr. E. J. Barton, Officiating Magistrate of the 24-Pergunnahs District, writes on the 25th of February 1870 that cattle disease prevailed in some parts of the district in 1869, and encloses a statistical statement which does not pretend to embrace all the affected villages, a few villages only in each sub-division being selected. This statement embraces two villages of the Diamond Harbour Sub-division, 23 villages of Busheerhaut, and four villages of Barripore. The deaths reported are 93, 44 and 57 in these sub-divisions respectively, total 194. The outbreak is dated February in Diamond Harbour and September in the other two. The diseases noted are *puschima, bosonto or gootee*, which are, from the symptoms detailed, names of rinderpest, and *aishu*, or foot and mouth disease.

Visit to Wooltadangah Cattle-sheds and Fair.

5th April 1870.—Visited the cattle-shed of Kistoghose of Wooltadangah. It is a *durma* matted house with *golepatta* thatching. It contains 40 head of cows, most of which are in very good condition; the size of the shed is 9 × 16, the floor is raised to the height of 2½ feet, and consists on its upper surface of tiles and wood; at the rear of the stalls is an open drain about 1 foot deep by 6 inches broad, running the entire length of the shed. There were two ranges of stalls; at the head of the stall are mangers (gumlows); the diet of each animal consists of 40 bundles of rice straw (weighing 5lbs.), 4lbs. of urhur dal, bhoosee (ground rice husks), and 2lbs. of oil-cake (linseed and mustard); each animal gets about 20 quarts (two kolsies) of water daily in two portions. The Wooltadangah. Food.

WOOLTADANGAH. sheds are well ventilated, but at each door and window is a gunny (coarse cloth) for the purpose of keeping flies out and the byres dark. There is a good fall to the drains, the dung and urine are collected in a reservoir at the lower end outside the shed, and when in a sufficiently dry state are made into cakes for fuel purposes; the atmosphere of the shed is sweet, the temperature is cool; the sweetness of the atmosphere depends upon the good fall of the drains, and the inducement for the good fall is the manufacture of the fuel cakes; at one of the entrances is a fire-place where the fuel cake is continually smouldering for the purpose of keeping the flies and mosquitoes out of the shed, and this plan is evidently successful, as very few flies could be seen in the shed. At night, for some little time, a larger fire is made with a view of giving a good fumigation to the shed. Cows cost on the average from Rs. 10 to 30 at the Wooltadangah haut, and they yield from 1 to 3 seers of milk daily, being milked twice a day: the cows are occasionally washed for the purpose of removing the dung from their bodies. Kisto purchases his cows at the Wooltadangah haut only, and these cattle are brought from the north and north-eastern districts (Baraset and Nuddea). He is not aware of any being brought from the western side of the Hooghly. He has had experience in regard to the disease *bussunto*. In last September (Assar) he purchased a cow at the Wooltadangah haut, and four days after he had placed it in his byre, it became affected with bussunto, and five others became affected afterwards. He gave them green grass and wheat gruel and kept them in the same shed, but a little apart from the other cattle, and all recovered. He knows the disease to be infectious, and he is also aware that a cow never gets a second attack. The reason why the rest of the cows in the byre did not become affected was, in his opinion, that they probably had the disease before he bought them (in the villages where they were reared). He never has lost a cow from bussunto. He always feeds them as above recorded. When cattle do not give milk, or get old, they are sold to butchers.

Ventilation.

Temperature.

Fires.

Price.

Bussunto (Rinderpest).

Cattle market. 3-40 P. M.— Visited the Wooltadangah cattle market. There were 98 cows and 82 calves for sale. Saw one cow with discharges from eyes, nose dry, respiration very much affected. The owner said that he had bought it from Cassiadangah, north-west of Krishnuggur, distant 6 miles. No male cattle are sold at this place. The Izaradar of the haut was present, he said that he was paying Rs. 150 monthly for Wooltadangah and Dum-Dum haut. This sum he pays to Amanut Ali, a butcher of Kurriah, near the burial ground. He said that, for some reason or other, goallahs would not buy at the present moment so many cattle as they used to do before. Another man, who had bought a few head of cattle for sale at the market, told the Commissioners that in consequence of the prevalence of gootee in certain places of Calcutta milkmen did not purchase many cows. Cows and calves only are sold at this haut, and no bulls or bullocks. It was further ascertained that the traders got their supply of cows from the districts of Nuddea, Jessore, and Furreedpore, and an animal that cost the purchaser Rs. 8 ten years ago, cannot be had now under Rs. 15. This increase is attributable to the circumstance that cattle have become rare, and that the butchers are buying up all the cattle of the country. The farmer of the fair would not admit that cattle affected with bussunto were ever sold in the market, but he said that animals with foot and mouth disease were now and then sold at the market. The traders were almost all Mussulmans. Occasionally a few cows were brought from Ooloobariah when they were not sold there.

Cattle Market, Wooltadangah.

Rinderpest prevalent in and around Calcutta.

Stock whence brought.

Value.

Cause of increase in price.

Kidderpore.

Visit to the Kidderpore Cattle Market.

6th April 1870, *Noon.*—Visited the Kidderpore cattle market. Kipiatoollah Mecah is the farmer, but was absent; his nephew Meajan was present. The market is held twice a week, *i. e.*, Wednesday and Saturday; there were 360 head of cattle this day for sale here. Both bullocks and cows are sold here. Examined all the cattle carefully and minutely and found them to be healthy, but very many were found in very poor condition; cattle come here from Jessore, Oolooberiah haut, and Busheerhaut; the butchers chiefly buy these cattle. Other people also purchase them. The price of the cattle is from Rs. 2 to 25; those cattle which are not sold in one haut are kept and produced for sale in the following haut; these cattle are not taken to any other haut from this place, as this is the last market-place. The animals are taken out to pasture by day and tied up during night. On the market grounds the owner of the cattle sells his stock to the butcher, and the butcher slaughters the cattle and disposes of the hides to the hide merchant for Rs. 1-4 to 2-8 each hide. The hides of live-stock are marked as soon as they are purchased by the butcher. There is a less number of cattle brought to the market than before; the cause of

Inspection of cattle.

Cattle whence brought.

Price.

Disposal of cattle, and hides.

this is that cattle have become rare and the agriculturists do not like to sell them. There are local cattle hâts where the pykars (dealers) make their purchases and bring the cattle for sale to the butchers at Dum-Dum and Kidderpore, the butchers never go to Oolooberiah and Wooltadangah; the two latter markets are supported by milkmen and agriculturists. KIDDERPORE.

Evidence of Mahomed Ali.

Mahomed Ali, the proprietor of the Kurriah slaughter-house, who was present, said that there was no great demand for butcher meat owing to fish being cheap; the cattle have died away and they are consequently becoming rarer daily. Does not know whether there is at present any disease prevailing in Calcutta or not. Has not heard also. Cannot say whether the circumstance of the disease prevailing in Calcutta, prevents the milkmen from buying a large number of cattle or not. The cow sold 10 years ago for Rs. 8 is sold for Rs. 12 or 13 now.

Price.

Evidence of Amanut Ali.

Amanut Ali, brother of Mahomed Ali, says that he has a large slaughtering-house at Kurriah in the suburbs of Calcutta where 50 to 60 head of cattle, on an average, are daily slaughtered. Does not himself slaughter any cattle but is a hide merchant. Advances Rs. 400 to 800 to each butcher. Is present at the markets of Kidderpore and Dum-Dum, and as soon as the butchers who are under an advance from him, buy any cattle, he places his mark upon them, so that another hide merchant may not be able to take the hide. Has advanced Rs. 83,000 to the butchers for hides. Sells the hides to Golam Arab Arutoollah of Colootollah, who delivers them to the mercantile firms, who either export them or use them in this country. Pays Rs. 2-4 and 2-6 for each hide to the butchers. Takes *dagi hides*, namely, those marked by firing—branded, does not buy *murdah* (dead) hides. There is a man near Dum-Dum who buys them. There are three sorts of hides, Nos. 1, 2, and 3. No. 1 is *suffa* (or free of fault). No. 2 is *fut dagi* (cut or broken). No. 3 is *dagi* (branded).

Hide trade.

Murdah hides are a different class of inferior hides. Does not dress the hides, the *Arutdars* dress the hides.

Golam Arab, Fyzoollah, Hufeezoollah are some of the Arutdars.

Visit to the Dum-Dum Cattle Market.

19*th July* 1870.—Dum-Dum, Shamnuggur, 7 A. M. Visited this morning at 6 o'clock the cattle fair at this place. About 300 to 400 head of cattle were exposed for sale. There were cows that had ceased to give milk and bullocks in almost equal numbers. The fair meets once a week, and it is from this market and Kidderpore that the Calcutta butchers get their supply of cattle. The butchers pay from Rs. 4 to 30 for each animal, the price varying according to the condition of the cattle. The cattle are brought to this fair from Jessore, Modhookhally, and Jughetdulin Furreedpore. DUM-DUM.

Inspection of cattle.

Weekly fair.

Price.

The cows that give milk are sold at the Wooltadangah market only and are brought from the Kishnuggur District; some cattle are also brought from the Rajshahye District. There is an izardar (farmer) of this market. No diseased cattle, it is said, are admitted into the fair. There is no *gootee* now prevailing. There was gootee in the hot season, but with the fall of rain it disappeared. The butchers say that they can recognise the disease gootee, the symptoms of which are drooping ears, watering from eyes and mouth, and sticky discharge from nose. The affected animals also purge, and some of them have eruptions on their body.

Rinderpest.

Bibun Butcher says, that he has seen sick animals in the fair, but that he has invariably rejected them. Other butchers have done the same. Amanut Ali of Kurriah, Khadem Hossein Cazee of Narcoldangah, and Sheraj Sarcar of the same place are traders in hides, and they advance the butchers Rs. 300 to 500 and Rs. 600 even; no interest is charged, but they are obliged to supply them with hides at fixed rates. Amanut Ali's rate is Rs. 2-10 the skin, Khadem's Rs. 2-6, Sheraj's the same.

Hide trade.

Bibun says that the price of slaughter cattle has increased. The animal that cost Rs. 8, 10 years ago, cannot be had under Rs. 10 or 12 now. The butchers do not go to Oolooberiah but to Dum-Dum and Kidderpore markets which meet once a week. Saw an old cow in the fair in very bad condition, and the bepari, who brought it, said that he had got it from the Soonderbun Grant, Camorghaut for Rs. 4. It has much sticky discharge from nose, profuse discharge from eyes, dung hard, hair standing on end, scabs and pits here and there; buccal membrane congested; aphthous condition of the lower gum. Another old bullock was seen, said by the owner to have been bought at the Baripore Fair, Jessore. The animal was breathing hard and had a sticky discharge from the nose—a suspicious case.

Price.

Case of rinderpest.

Six head of cattle were seen; the owner said that he had bought them from Soonderbun lots Minakhan and Camorghaut. These looked as if they had recently recovered from rinderpest.

Dum-Dum.

Evidence of Wuzeer Bepari.

Wuzeer Bepari, an elderly cattle dealer present in the cattle fair, states that he has been a dealer for the last 25 years or more. Lives at Baneepoor Hât, Jhenidah, Jessore, where there is a large cattle market where he gets his supply of cattle principally. He, as also other beparies (dealers), get their supplies from other places, such as Pubna, Rampore Beauleauh, Jessore, and Kishennuggur; they do not go about from house to house and purchase cattle by private bargain, but they frequent cattle markets only in certain districts; they seldom or never buy cattle labouring under gootee, which malady appears generally in the months of January, February and March. The disease disappears after the fall of rain. Informant and other beparies visit the cattle hât at Puddobilah, Zillah Nuddea, in August and September every year, and buy cattle there. They saw gootee amongst cattle at Puddobilah last year. It has occasionally happened that after buying cattle for the Calcutta market one or two animals got gootee. These generally die and they throw the carcasses into the *bhagar*, but those that recover are brought to the market after some time. He brings a herd of 50 to 60 head of cattle each time from a distance of 7 to 11 marches, and during night keeps the cattle under some trees or in some bazar by the road side, where the herdsmen cut grass and give it to them. Has never seen cattle being poisoned at Jhenidah or any other place. Has seen gootee in several districts. The disease spreads from one village to another. The best cattle are generally bought by the regimental butchers. Has known that people in the interior have offered gootee cattle for sale at half the usual price.

Baneepoor Fair.

Puddobilah Fair.

Movements of cattle.

Rinderpest.

When asked in what district he found gootee most prevalent, he stated that he could not assert that any one district is more healthy than another; that the disease prevailed sometimes in one, sometimes in another; if any thing he thinks that disease is worse towards Magoorah in the Jessore District. States in conclusion that young and well conditioned animals are more liable to attacks of gootee than the old or emaciated ones.

Visit to the Municipal Slaughter-house at Tengra, 22nd December 1869.

Tengra Slaughter-house.

The municipal slaughter-houses consist of three blocks: one intended for the slaughter of cattle, another for sheep and goats, and the third for pigs. The first two stand close together on the right of the municipal railway which runs to Dhappa, and the third stands separate from these on the left of the line. These are well-built open sheds of brick-work with very excellent slaughtering arrangements. Animals are brought for slaughter during the evening and night. They are thrown and killed by having their throats cut. The blood runs into a series of earthenware basins into drains which are flushed by water brought from a cistern, which stands between the two larger sheds at a considerable height. The water is pumped up by a steam engine. The carcass is now raised by pulleys and ropes attached to iron beams, the offal is removed, the carcass is quartered and stamped according to quality on the quarters, hump and sides. The offal and dung are removed by conservancy carts, and sent to the Salt Lake at once. The lights and head are sold outside the premises, and the hides are carried off by contractor's carts, having been previously sold by the butcher to the hide dealer. This slaughter-house was repeatedly visited, and once or twice during the time when cattle were being slaughtered and the arrangements for slaughtering and disposal of offal, &c., were always found to be admirable. No unpleasant smell of putrefaction was ever observed. Mr. D. K. Peddie is in charge of these slaughter-houses. He furnished the following information:—The place is constructed to hang 264 carcasses of cows, and 3 sheep may be reckoned to each cow. Buffaloes are sometimes brought for slaughter, but the number of cattle daily killed varies between 50 and 100. This is owing to the native slaughter-houses at Kurriah and Narcoldangah continuing open notwithstanding the refusal of the Suburban Municipality to license them. The cattle brought to Tengra are principally 1st class and come from the goallas' sheds in the northern part of the town. He is the sole inspector and judge of the healthiness of cattle and the quality of meat, and when any difficulty arises, the Health Officer is applied to. About one month and a half ago one animal was rejected for "pox." The order is, that rejected carcasses are to be destroyed, the justices paying for the cost. He never noticed foot and mouth disease or heavy lungs. The charges for slaughtering are—1st class, 4 annas each, 2nd class, 2 annas, calf and kid, 1 anna, sheep and goats, 2 annas. As regards breed, Bengali cows are generally brought for slaughter. Mr. Peddie remarked that as long as the native slaughter-houses remained open, only 1st class cattle would be brought to Tengra.

Kidderpore Slaughter-house.

12*th July* 1870.—Dr. McLeod and Baboo Hem Chunder Kerr proceeded at 3 P. M. in company of Mr. Bartlett, Municipal Inspector of Bazars, to visit the Kidderpore Slaughter-house. This is an open shed brick built, with a central drain leading into the adjoining nullah for conveying away blood, sweepings, and refuse. Its use, as a public slaughter-house, has been discontinued for about two months in consequence of the refusal of the Suburban Justices to renew the

license. Commissariat cattle to the number of 6 to 8 are still slaughtered there. As the Commissariat operations do not commence till 6 P. M., there was no opportunity of seeing how they are conducted.

Tengra Slaughter-house

The slaughter-house at *Kurriah*, owned by Amanut Ali butcher, was next visited. It is an open thatched shed with central drain leading into an adjoining masonry pit. The carcasses of about 100 sheep and goats recently killed were seen, and they seemed to be in good condition and sound. Some 70 cattle had been brought for slaughter, and these were carefully examined. They were mostly cows, but several bullocks were likewise seen. Some of the animals were in very fair condition, most of them in poor, and some in wretched condition. Several animals appeared to have recently recovered from rinderpest. They were extremely emaciated, hair rough and erect. There was loss of hair and a caked covering of soft excrement around the anus and on the posterior aspect of the hind legs. Bare patches of skin and small scabs were seen on the back, sides and dewlap, and the dung of many was very soft. The intestines of one cow, which looked worse than the rest, were inspected and presented externally a congested appearance. On opening the cœcum of this animal, it was found sparingly filled with gruelly excrement, patches of congestion appeared on the mucous membrane which was considerably thickened and studded with aphthous ulcers in process of healing. The small intestines were constricted, somewhat congested and the mucous membrane thickened. The liver and spleen contained numerous cysts. Cysts were seen in several other livers.

Kurriah Slaughter-house.

Animal affected with rinderpest slaughtered for food.

The cattle slaughtered in this place are most of them bought at the Dum-Dum market and a few at the Kidderpore market. The hides are bought by the proprietor Amanut Ali.

Calcutta Meat Markets.

16*th July* 1870.—Dr. McLeod and Baboo Hem Chunder Kerr proceeded at 6-9 A. M. in company of Dr. Tonnerre and Mr. Bartlett to inspect the meat sold in the Colingah Street Bazar. The mutton seen was very good, no disease was detected. Much of the beef was poor and pallid, but could not be said to be positively diseased. Some of the pale meat was more like veal than beef, the fibres being absolutely anæmic and sodden looking, but firm and free of cysts or cretaceous particles. The Dhurrumtollah Bazar was next inspected. The quality of the meat exposed for sale here varied greatly, much of it being really good, and much of the inferior pallid description above described. Small stalls are used behind the market for the sale of liver, tripe, &c. Several specimens of cystic liver were here seen and on one table a piece of small bowel in a state of acute inflammation. This inflammation seemed to be general and no specific lesion or appearance of aphtha was seen on opening the gut. Dr. Tonnerre remarked that fowls were frequently brought for sale affected with "gootee" an eruptive affection manifested on the comb and bill of the bird. The Tretta Bazar was next visited. The quality of the beef and mutton examined here was good. One or two cystic livers were seen and a bad specimen of cystic pork. The cysts were very numerous throughout the meat, which was confiscated. The cysts were spindle shaped about ¾th inch long, consisting of a clear sac containing a glistening pearl like body sprouting from the lining membrane of the sac about the size of a pea and consisting of concentric laminæ. The lining membrane of the sac was composed of broad interlacing fibres in whose interstices numerous cellulæ or sac like bodies appeared. On examining the fluid contents of the outer sac microscopically, clear bladder-like bodies of all sizes were observed, some plain and unmarked, others granulated, some caudate or kite shaped, and others oval or round. Molecules in active motion and bacteria were also seen in great numbers. The muscular fibres surrounding these cysts did not appear to be in any way diseased.

Colingah Street Market.

Meat.

Dhurrumtollah Market.

Meat.

Tretta Bazar.

Cystic meat.

Nature of cysts.

Municipal Platform at Dhappa.

9*th July* 1870.—Dr. McLeod and Baboo Hem Chunder Kerr proceeded in company of Dr. Tonnerre to the municipal platform at Dhappa, constructed for the disposal of all animals dying within municipal bounds. The "platform is a space raised above the surrounding bheel, and carcasses sent thither are conveyed to the place by a small tramway. A contractor pays the municipality Rs. 125 monthly for the right of removing hides, and the carcass is abandoned to vultures and adjutants after the hide has been removed.

Dhappa.

Municipal platforms.

The number of dead animals sent to this place has decreased of late, as will appear from the following statement for 1866—69 furnished from the Office of the Health Officer.

Number of carcasses.

Statement showing the number of dead cows and calves brought to the skinning ghaut from 1st January 1866 to 31st December 1869.

	1866.			1867.			1868.			1869.			Grand Total.
	Cows and Bullocks.	Calves.	Total.	Cows and Bullocks.	Calves.	Total.	Cows and Bullocks.	Calves.	Total.	Cows and Bullocks.	Calves.	Total.	
January	64	82	146	87	62	149	143	80	223	269	34	303	821
February	63	78	141	58	55	113	126	78	204	219	84	303	761
March	71	78	149	34	39	73	103	63	166	161	78	239	627
April	58	66	124	23	20	43	171	51	222	107	34	141	530
May	71	70	141	50	32	82	145	48	193	76	40	116	532
June	93	39	132	31	25	56	58	45	103	90	43	133	424
July	83	49	132	62	28	90	57	49	106	106	51	157	485
August	126	62	188	51	39	90	62	54	116	107	42	149	543
September	115	64	179	58	51	109	46	48	94	100	43	143	525
October	84	58	142	65	56	121	155	67	222	108	65	173	658
November	86	72	158	118	72	190	141	57	198	109	36	145	691
December	103	62	165	85	62	147	133	57	190	120	41	161	663
Total ...	1,017	780	1,797	722	541	1,263	1,340	697	2,037	1,572	591	2,163	7,260

C. F. TONNERRE.

The alleged reason of this is, that other chamars remove carcasses surreptitiously elsewhere in order to obtain the hides for themselves. DHAPPA.

On this afternoon only 3 carcasses had been brought, namely, those of one cow and two horses; that of the cow was opened and examined.

Post-mortem appearances.

The abdominal cavity presented, when the viscera were exposed, every appearance of acute inflammation. The peritoneum was generally injected and that covering the intestines more vividly so. The omentum was more especially congested where it was reflected off the lower borders of the stomach.

* *Khosa* or husk of gram.

The *rumen* was well filled with softish food which was at its entrance in a pultaceous or liquid condition. Here many grains of gram* were found and among these occurred a considerable number of the grains of the *kunch* plant (Abrus Precatorius). The lining membrane of this viscus was congested, more specially at the entrance of the organ. The *reticulum* and *omasum* both contained soft food and many grains of *khosa* and *kunch* and their lining membranes were also in a state of congestion. The contents of the *abomasum* were still softer, consisting of a yellowish brown gruelly matter in which the seeds above-mentioned were also seen. Some of the kunch seeds were hard and others softened and in process of bursting. Spots of acute congestion were seen on the mucous membrane, the greater part of which was apparently healthy. The *small intestines* contained throughout a mixture of blood and mucus. The mucous membrane was acutely inflamed and presented a vividly congested appearance with spots of extravasation. The *larger intestines* were in the same condition, but less severely affected.

On the way back, the Municipal Slaughter-house at Tengra was visited. Some fifty cattle had just been slaughtered and were being eviscerated. The arrangements of the slaughter-house are in every respect admirable, and all the operations were conducted in a methodical cleanly way, while there was an utter absence of any offensive odour. The quality of the meat appeared to be unexceptionably good, and no diseased appearance was detected in the meat, viscera or dung with the exception of cysts in the liver of one animal.

Visit to the Dhappa platform by Mr. HALLEN *and* Dr. MCLEOD *on the 10th November* 1870.

Saw 1	1 Bullock	}	From Taltollah.
„ 2	1 Cow	}	
„ 3	1 Bullock		„ Bag Bazar.

These were opened in our presence.

No. 1. Cysts in liver and lungs, stomachs healthy, lungs inflamed, hepatized (red.) Heart flabby.

No. 2. Stomachs healthy, small intestines congested, liver tubercular and extremely fatty lungs collapsed and emphysematous.

Heart extremely flabby and dilated; walls very thick.

No. 3. Prepuce inflamed, all stomachs inflamed and much distended with a large quantity of food (chiefly paddy straw); spleen contained two immense cysts as large as a small pumelo; liver contained several cysts, large and small.

Lungs congested (acute); heart very thin, pale, and flabby. There was no sign of rinderpest in any case and no cyst in the muscle of the heart or in the muscles elsewhere. All three in fair condition. The two bullocks were cart bullocks. Vultures fed on the carcasses and their claws and heads were smeared and red with blood.

The carcasses of three horses were seen, but there was no time to examine them.

Many horses are disposed of in this way.

Evidence of Mr. J. DISSENT *of the Health Officer's Department, Calcutta, recorded 7th April* 1870.

Mr. J. Dissent.

Duties and powers of Inspector.

I have been a Conservancy Inspector for the last six years in almost all parts of Calcutta. My duties are to see to the general cleanliness of the town and to prosecute persons for committing nuisances. With regard to diseased cattle, if I see a diseased cow or bullock let loose on the street or running about unclaimed, I have the power to destroy the animal and prosecute the owners, if he is found out, in the Police Court.

Mr. J. Dissent.

During the last 6 years I have frequently found diseased cattle in the precincts of the town and my experience is, that no sooner cows in the *goallas'* sheds become diseased with *gootee* than they are sold to the butchers. In cases where the *goallas* are aware that the Health Officer is cognizant of the disease prevailing in any particular shed, the owners thereof become careful and do not sell the diseased animals to the butchers, but cart them off when they die, to the place appointed by the Justices; now to Dhappa; formerly to Golabari Ghaut.

Disease in cattle frequently met with.

I have apprehended butchers who have purchased cattle very badly diseased with *bussunto*. These men take diseased carcasses into the town for sale for human food. On the 2nd instant, about 12 noon, I apprehended 4 men who were carrying on a cart, a cow very badly diseased with *bussunto*. I inquired and found that the animal, still alive, was being carried to a private slaughter-house, whereupon I seized the animal and having obtained a warrant for its destruction, had it destroyed at Dhappa. During the past 6 years *gootee* has always been present in Calcutta at certain seasons but for the last 2 years the disease has been very prevalent. *Gootee* is more prevalent at this time of the year than in other months. I would suggest that the Commission apply to the Health Officer for detailed information as regards the prevalence of *gootee*. I think the Commissioners ought to visit the cattle sheds in division No. 2, as most of the cows of the town are kept in that division. With reference to the disposal of hides of diseased animals, I may mention that there is a contractor named Madhub Moochee who receives for a certain sum that he pays the Justices the skins of all the diseased animals, *bussunto* included. At the present moment, the contract system has been done away with and the Justices are carrying on the business themselves.

Diseased meat.

Rinderpest in Calcutta.

Hides.

The disease generally is more prevalent at this time of the year and commences at the same time in different sheds and in different parts of the town and generally spreads from these centres to other places. I believe the disease to be contagious, but I cannot say whether it has been brought into town from other places or is indigenous to the place. The neighbourhood of cowsheds is covered with cesspools of dung and urine accumulated from the sheds. I find eruptions on the skin of the diseased animals in *bussunto* cases. They refuse food and drink and there is discharge from eyes, nose and mouth and purging, the animals are uneasy and there is puffiness of the stomach. The diseased hides are curried in Madhub's Tannery, but these hides turn out very inferior and are generally used by the lower grades of moochees for making shoes, and are not exported. The disease commenced in town in December last, and I think it is still raging, though in a mild form.

Sanitary condition of cowsheds.

Visit to Manicktollah Dairies.

Manicktollah Dairies.

4-30 P. M. Visited the cattle-shed of Ramkisto Goal. Saw a diseased cow with profuse discharge from eyes and nose, excoriation on lower lip, corner of mouth, also on mucous membrane of pad: ill 12 days, had purging with blood, is better now. Owner lost 4 cattle of *gootee* in August. There were 2 ill at this time, one has recovered; buys cattle from Wooltadangah Hât, purchased these 2 cows 3 months ago; does not know of the sale of any diseased cattle at the markets. The shed is very nice and clean, temp. (4-30 P. M.) 92°. No eruption on the one that has recovered. No eruption on the cow still ill but scalding on the thigh from purging.

Visit to a byre.

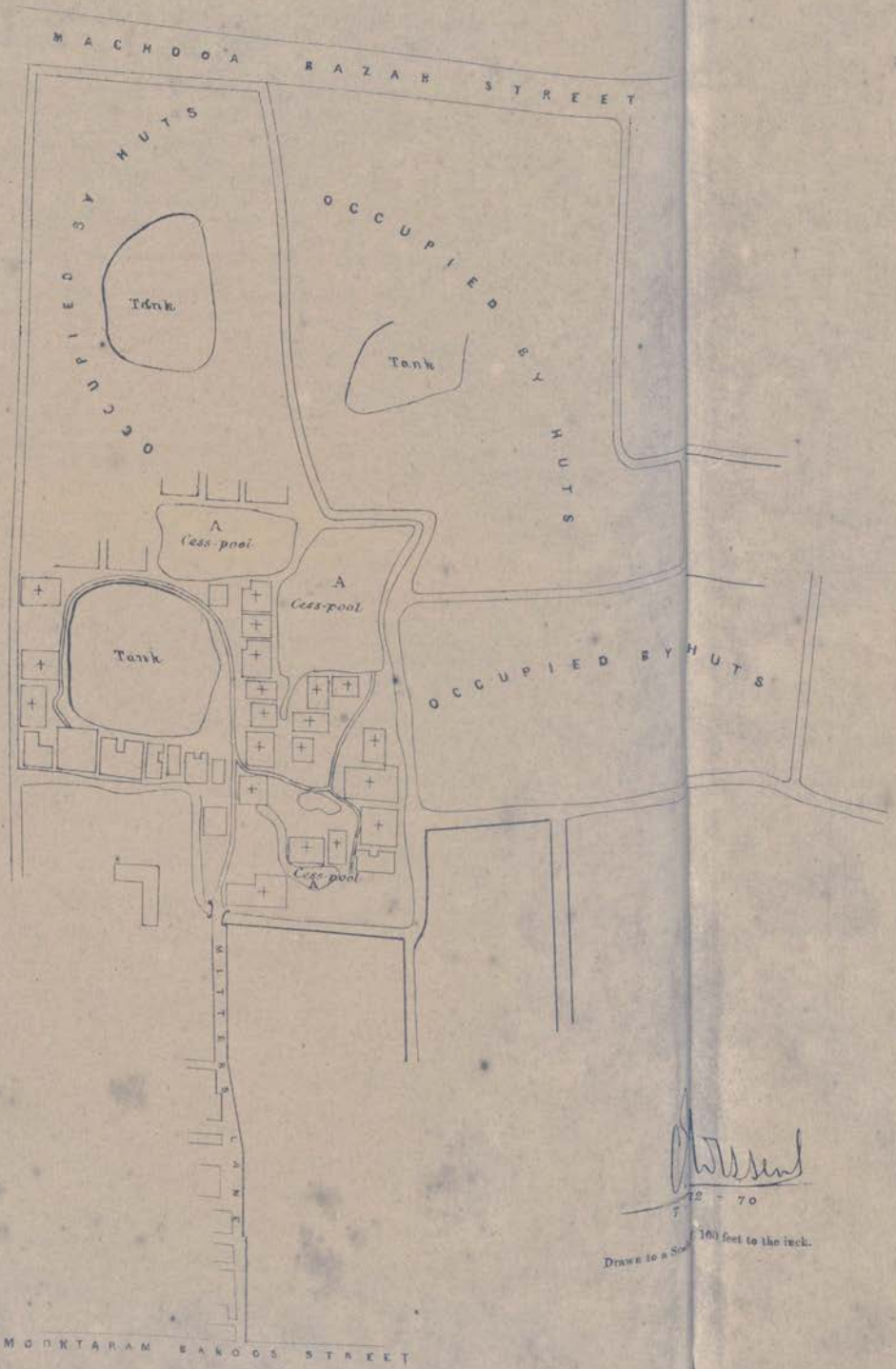
Case.

Saw also cow which has had 3 calves: ill 9 days. Had the cow for the last 6 months. Cattle-shed had 32 head of cattle in it (owner Gopal Cooky): every one of the cattle was ill, but they have all recovered now. The disease commenced in February last. Owner lost 2 cows. The one that is sick is very ill, the symptoms are very urgent; there is very viscid discharge from eyes, nose, and mouth, excoriations on both lips and lower gums, with aphthous deposits; tongue very much furred, most offensive breath, purging watery stools; a number of flies attracted by discharge; eruptions over all parts of the body with a pimply appearance, slight eruption surrounded by a cracked appearance on skin of udder. The milkman says he gives tepid water and green grass; he also applies ghee and pan to the mouth. Did not buy cows for the last 4 months: the last he purchased from Dum-Dum market. Purchases from Dum-Dum and Wooltadangah markets. Has lost 52 head of cattle during the last year: the disease commenced in Chyt (March) last, all the calves have died. They send cows to be served by bulls kept up for breeding purposes at a cost of 6 to 8 annas for each cow. After a cow has been to the bull, she gives milk for 5 or 6 months. Sold some calves to others and some died; sells cows when they become dry and buys new ones: the cattle that had been

Another byre.

Treatment.

Loss of cattle.



+ Goashlah's Cow sheds

Lands strewn or hesped with Cow-dung

A Cesspools

Streets Pathway

7 12 - 70

Drawn to a Sc[illegible] 160 feet to the inch.

bought became ill 2 or 3 months after the date of purchase. Lost Rs. 1,300 in 52 head of cattle. Every year looses 2 or 3 cows from gootee. Other milk men are equally unfortunate. The cesspools in the neighbourhood of the sheds inspected this day are in a filthy state, but the cow-sheds are comparatively clean. When a cow gets an attack of *gootee* she does not get it again. Has seen one or two in ten never get *gootee* although others get it; this is owing to their having been attacked in the native villages. *Puschima* is very rare, sometimes it comes on in the rains and sometimes in winter. The subject if it dies, dies on the 1st or 2nd day, after that it recovers. The usual *puschima* symptoms are given. Has 50 or 60 cattle in the shed. Never before did he lose so many cattle as this year. In other years the number of casualties was 5 to 10 or even less.

Losses by Rinderpest yearly.

Cesspools.

Second attack rare.

Puschima.

Three other cows with gootee were seen in a neighbouring shed where there are 12 head of cattle. The owner lost 4 cows during the year of *gootee*: bought a new cow 2 months ago, the disease broke out 15 days ago.

Another byre.

Another cow sick of *gootee* was seen in another shed. There are 19 cows, all were ill, 4 died; bought 3 months ago. Cattle disease made its appearance once before in Kartick (October) and on this occasion, 10 or 11 days ago. Last year lost 2 or 4: disease does not come every year.

Another byre.

The Balaram Day and Sookea's Street Dairies.

The Balaram Day and Sookea Street Dairies consist of a number of huts rather irregularly placed among several pools of dirty greenish brown water called tanks. Some of these "tanks" are covered thickly with green vegetation, which has to be removed or skimmed away when any one goes to draw water or bathe. The water looks intensely dirty and seems to be actually thick with filth. There are steps on one or more sides which lead down to the water in which men, women, and children bathe and it is acknowledged by the natives that the bathers always relieve their bladders every time they bathe. They also wash their clothes here, and while this bathing and washing was going on, a child was observed cleaning some grain, probably rice, in a small basket at the same steps. This water is used for domestic purposes, women were seen carrying away pitcher-fuls of it, for watering cattle, for lepoing the floors of houses, and, it is asserted, for diluting milk. A dairy hut is a long unpartitioned house with walls of bamboo matting, sometimes daubed with cow-dung and clay, and a tiled roof; generally about 10 yards long and 4 yards wide, and the ridgepole not more than 8 feet from the ground; the floor is generally raised about 1½ to 2 feet. Down the centre runs a single narrow drain about 9 inches wide and one foot deep. On each side of this, the floor is planked and outside the planks flagged. The planks and flags, form the floor of the stalls on which the cattle stand: outside of this space stand the mangers which consist of a range of large earthen vessels about 2 feet in diameter. These are placed upon a bank of clayey earth which is raised about 1 foot above the level of the floor and is separated from it by a plank set on edge along the inner and upper border of the earth-work. The cattle are tied to posts well sunk into the ground. There are no separate stalls and when standing the hind feet of the animals are close to the edge of the drain, so that dung and urine fall into it. This arrangement is evidently adopted to save trouble. So narrow is the standing room that when a cow lies down, she has to do so obliquely. The cattle are packed as closely as possible and when standing together in two rows their sides touch each other; they also frequently dung over each other. There is generally only one door at the side and there is a small window at each end. On each side of the entrance there is a narrow verandah in which straw, &c., are kept and where cattle ill with rinderpest are *placed for segregation.* The end windows are kept closed, a purdah generally hangs at the doorway within which a smouldering cow-dung fire constantly burns in order to keep flies and mosquitoes away from the cattle. The beams and inside of the roof are covered with a thick layer of cobwebs and dust. The drains are open at each end and their contents fall into cesspools or open drains leading into cesspools. These cesspools vary in size from 6 to 20 feet in diameter and are generally 10 feet deep, and the contents are never removed. They are exceedingly numerous and surround the houses and dairy sheds in every direction. The solid manure is removed as required for the manufacture of cow-dung cakes and the putrid liquid manure is sometimes at night surreptitiously turned into an adjoining municipal drain. If there is no such drain convenient the liquid manure is left to evaporate or subside and it goes on seething and decomposing until a municipal prosecution and penalty force the owner to fill up the pool. This is sometimes done by throwing some loose earth and litter over it. Vegetation grows upon this, an artificial quagmire is formed and there are so many of these quagmires in the neighbourhood of these sheds that a visitor has to trust to the services of a guide for safe conduct through the place. One pool larger and more

Sanitary condition of cowsheds.

Balaram Dey and Sookea Street.

liquid than the rest was pointed out by Mr. Dissent, the Municipal Overseer, who accompanied the Commission. This was covered with a frothy scum of combustible gas, and when a lighted match was thrown on its surface a flame spread all over the pool. Wells are occasionally met with. These are constructed when the water of the neighbouring tanks is very bad. The water in these wells seems to be quite as bad as that in the tanks. The walls of the houses and sheds and all the available dry ground are covered with cow-dung cakes which are used for fuel in the sheds and dwelling-houses and for boiling the milk. The manufacture and drying of these cakes is carried on daily and the cakes are stacked and thatched as completed, for sale. The cows generally are of the small Bengal breed. They are, as a rule, in excellent condition, but it was observed that with few exceptions they laboured under diarrhœa, a consequence of the oil-cake with which they are fed. This probably accounts for the oily taste which the Calcutta milk is often said to have.

Oilmen's Sheds.

The oilmen's sheds at Manicktollah are somewhat differently arranged. They are much longer. At each end there are stalls for the bullocks. These are generally flagged; with a central drain which has a good fall towards the end of the shed where the usual cesspool may be observed. The central portion of the shed is occupied by the oil-mill or mills; to each mill one bullock is yoked. The animals are blindfold while at work, and a small *gumlah* is suspended by a string below the belly in order to catch the urine. The bullocks are generally in good condition and the manufacture of cow-dung cakes goes on in exactly the same way as in the dairies.

The truth of the foregoing description, which was written from observation, is, as regards the filthy state of these localities, well confirmed by the following judgment :—

Prosecution of Goallahs in Mitter's Lane.—Police, 31st August 1870.

(Before BABOO OMESH CUNDER DUTT, Honorary Magistrate.)

Thirteen *goallahs* were charged with keeping their lands in a filthy state. They were convicted of the offence, and His Worship gave the following judgment in their case :—

The defendants, who are *goallahs* by profession, admit the charge brought against them under Section 32 of Act VI of 1866 B. C. They could not have done otherwise, for I have carefully examined the land myself on which they have committed, and still continue committing, the nuisance with which they are charged, and can conscientiously affirm that I have never visited a more offensive and filthy place. The defendants have kept up immense open cess-pools of cowdung, urine and other refuse in a state of putrescence, full of maggots and surcharged with noxious vapours. They have likewise kept up uncovered drains full of cowdung, urine and night-soil, which connect the several cess-pools with each other, and convey a seething and sluggish stream of putrefaction to the public drain, which is being rapidly choked up. The respectable people in the neighbourhood complained to me on the spot of the ever-increasing nuisance near their houses, adding that they have been tired of vainly applying to the Justices for redress, and that they are now obliged to live daily in a foul and tainted atmosphere, which is the cause of so much disease in their families. Being, therefore, satisfied by the admission of the defendants, and by my own personal observation, that the nuisance with which they are charged has been caused by their wilful neglect, and taking into consideration their indifference to the repeated warnings and admonitions of the officers of the Justices to clean their lands and to cease committing the nuisance complained of,—I cannot do otherwise than convict the defendants of the offence with which they are charged, and fine them in the sums as against their respective names. I further order them forthwith to clean their lands, and warn them that, if they are again brought before me under similar circumstances, I shall be under the necessity of imposing upon them the full penalty as provided for in the Act.

The defendants were fined in different sums, the amount of fines coming up to Rs. 280.

Evidence of GUDADHOR BARICK.—*Manicktollah, 14th November* 1870.

GUDADHOR BARICK states :—I am an oilman and have at present 12 head of cattle, all bullocks. I purchased these from the Oolooberiah Hât. I generally buy my cattle from that market. Last year during the cold season I had also this number, of which 7 had the *gootee*, 4 died and 3 recovered: the rest had the disease the year before and as one attack protects from a second attack, these escaped dying the outbreak of last year. The average price of a bullock is from Rs. 20 to 30. I am owner of several oil-mills and have always kept a pretty large number of animals, but I have never in my time (36 years old) seen a second attack among cattle. *Gootee* is a most

Cattle where purchased.

Rinderpest in 1869 and 1868.

Price.

Second attack.

fatal disease and there is no medicine for it. Out of 10 attacked 2 or 3 may get better. We apply only ghee and pan to the sick cattle; give generally green grass and other green vegetables to the cattle affected with *gootee*; but they generally refuse food. The cattle feel thirsty and we give water but in very small quantities. We also give the parched rice water. *Bussunto* in its attack is either mild or severe. The mild attack is not fatal. In mild cases the cattle do not absolutely leave off food; but in severe cases there is an absolute refusal of food. We give warm water to the sick cattle to drink. In mild cases the cattle keep their head somewhat erect, while those in severe cases they keep their heads down, also in severe cases the stool is watery, bloody, mixed with pus-like matter, whereas in mild cases there is dung in the stool and it is not so watery. In mild cases the skin is smooth and the hair does not stand on end so much as in severe cases, when the skin is very rough, the hair stands erect and something like small pimples underneath the hair are seen upon the body. This is a bad sign. We have observed that one or two bullocks purchased from the Oolooberiah Hât have entirely escaped the attack, while during their life time there has been sickness in the cow-house year after year. The idea of inoculating cattle never occurred to us and if it prevents a second attack we all will be glad to let our cattle be inoculated. During my lifetime I have seen the disease *gootee* and *aishoo* from my boyhood. (Here a man 78 years old says that *gootee* has been prevalent all the time since his boyhood, but formerly it was not so frequent as it has been during the last 25 years, he also says that he had heard of its existence in times gone by from his grandfather and father). I consider the disease to be infectious; as an instance, I may mention that on one occasion I got a bullock from Oolooberiah. As soon as it was brought to my house it looked ill and not only did it get the *bussunto*, but also others kept in the same stall. I have seen one or two cases of *gootee* in the Oolooberiah Hât. I know the disease called *puschima*. It occasionally attacks cattle; it is more fatal than *bussunto*. Death is quicker in it than from *gootee*.

Treatment.

Different types.

Symptoms of mild and severe attack.

Inoculation.

History.

Infectiousness.

Rinderpest in markets.

Puschima.

Sookea's Street, milk sheds—visited 14th November 1870.

HURRO CHUNDER SEN (50 years old) says:—I am owner of 90 cows in 4 sheds, all giving milk. My cattle have been free from *gootee* for the last 3 years. I lost none during the last year. I sold to the butchers nearly 25 cows which had got dry. I get my cattle from the Oolooberiah Hât and Dum-Dum market. During the last outbreak nearly all my cows got *gootee*; only 15 or thereabout did not get it, and I lost from that disease nearly 25 cows; the rest recovered. Those that did not get it must have got the disease before. My experience is that a cow that recovers once from *gootee* does not get it again. I did not separate the sick from the healthy, I have never done this. I never gave any medicine, for I knew and know of none. I only applied ghee and pan juice and washed the affected cow's mouth with hot water. *Gootee* generally breaks out in the months of January, February, and March. This sickness generally comes on at an interval of 2 or 3 years. The last attack was very severe. In order to extract as much milk as possible, we inflate the vagina each time of milking, and the men that perform that office, do not wear a moustache. We do not keep the calves; first for want of place, and secondly for fear of incurring expense in keeping them. On separating the calves from their mothers, the latter would not give any milk unless the vagina was inflated with air. On an average each cow gives 2 seers (4 pints) of milk morning and evening. We sell the milk in Calcutta and before selling mix as much water as there is milk. I feed my cow with the husk of *kalye*, oil-cake and straw. The husk is cheaper than the *kalye*, and therefore we cannot afford the latter although it makes the cow give more milk. The price of a cow varies from Rs. 20 to 40, when we sell it to the butchers we generally get the price we paid at the time of buying, provided the animals are in good condition: occasionally for a very fat cow we get Rs. 50 or 60. The feed of a cow costs Rs. 7-8 a month on an average. The price of a seer of milk is one and a half anna, sometimes 2 annas and sometimes 3 annas or even more during festivals. The cattle are watered twice a day, and we get the water from the nearest pond or well. If I give green *doob* grass to the cows they will give 25 per cent. more milk than they do on the

Evidence of Hurro Chunder Sen.

Cattle whence bought.

Rinderpest in 1867.

Second attack.

Separation.

Treatment.

Season.

Mode of milking.

Disposal of calves.

Yield of milk.

Feeding.

Price.

Cost of feeding.

Price of milk.

Watering.

SOOKEA STREET.

food we give them, but the milk in that case will not be not so thick, and consequently not so rich as we get upon *bhoosee*, *khulee* and straw. The price of *khulee* (oil-cake) is 32 seers for a rupee. The *khulee* is generally a mixture of mustard and *teel* and poppy. We never use linseed *khulee*. I am quite willing to have all my cows inoculated, provided this be a bar to any future attacks of *bussunto*. The attack of *bussunto* is sometimes mild and sometimes severe. Even if the cattle get a mild attack they do not get a second attack. After a cow affected with *gootee* gets round, it gradually gives an increasing quantity of milk until in about a month's time the former quantity in full is resumed.

Price of food.

Inoculation.

Different types.

Secretion of milk.

Mitter's Lane, Mooktaram Baboo's Street, Chorebagan,—visited 14th November 1870.

RAMDHONE PAUL (aged 70 years), says :—I am a milkman and own 70 cows. I always keep about this number. Last year in January, February, and March I lost from 25 to 30 cows from the disease called *bussunto*. In the year before, my cattle had *gootee* and I lost about the same number. We have *gootee* every year and I loose about the same number every year; 10 or 15 in a herd of 60 to 70 cows generally recover. The disease comes one year in a mild form and in another in a severe form. Free eruptions on the body of the affected cow lead to ultimate recovery. They appear on the body and on the udder. In severe cases the stool of the sick animal is watery, mixed with pieces of flesh-like material, body cold, watering from the mouth, eyes, and nose, and refusal of food. The animals that get watery purging mixed with flesh like pieces, and those also that get eruptions on the neck and throat generally die. I sell milk. I get my cattle mostly from the Oolooberiah Hât and sometimes I get them from cattle dealers who now and then come to our place with cows for sale. The price of a cow is Rs. 16 to 40. A cow gives 2 seers (4 pints) of milk on an average. When the cow becomes dry I sell her to the butchers: sometimes I sell cheap, at other times dear. We do not keep calves, and no sooner do we buy the cow with the calf then we sell the latter to the butchers and extract the milk by inflating the vagina. As a rule I do not loose much when selling. I give my cows *bhoosee* (wheat chaff) straw and oil-cake and it costs me 3 to 4 annas a day for the feed and keep of each cow. I keep a milk shop at Jorasanko. I water the cows twice and I get the water from this tank (a tank filled with filth and vegetation). *Gootee* has been known in this place from time immemorial; but for the last 10 or 15 years it has been more severe and frequent. In this locality the number of cattle is being reduced. This is owing to the heavy taxes imposed upon us every day.

Evidence of Ramdhone Paul.

Rinderpest in 1870 and 1869.

Different types.

Symptoms.

Cattle whence bought.

Price.

Yield of milk.

Food.

Watering.

History.

Evidence recorded at Balaram Day's Street Dairies,—visited 15th November 1870.

LALCHAND MARIK, aged 42. I have 24 cows at present, but the number varies, as I always keep selling and buying cows. In Pous (December) last my cattle were seized with rinderpest (*bussunto*). When two of my cows got the disease, I sold off my whole herd to the butchers, except 4 or 5 which I kept to carry on the business. In Jeyt (May) following I purchased a new lot. Before getting the new stock I cleaned and washed the stalls with water from the tank close to my house and *lepoed* the floor, keeping a fire lighted as usual to keep off mosquitoes. In Pous (December) three years ago I lost 11 head of cattle valued at Rs. 300. Out of 28, 17 were attacked but 6 recovered. The remaining lot did not get the disease as they probably had it before. Cattle never have *bussunto* more than once. The average time I keep cows is 6 or 8 months, as long, that is, as they give milk, but sometimes they continue to give milk for a year. The cost of keeping cows, including the servants attending them, is 3 annas and 1 pice per day: one servant attends to 10 or 12 cows. The price I pay for milch cows is from Rs. 20 to 40 according to the quantity of milk the cow gives. A good cow give about 3½ seers of milk a day. In selling cows I sometimes get a little more than the original price paid and sometimes lose half the cost price. I sell the calves to the butchers. My cows are fed with *bhoosee*, rice dust, oil-cake, and straw. Each cow gets 1½ pound of oil-cake, as much straw as they can eat and 7 or 8 pice worth of *bhoosee* and rice dust mixed. To make the cows give more milk when

Evidence of Lalchand Marik.

Rinderpest in 1869-70.

And in 1867.

Second attack.

Cost of keep.

Price.

Yield of milk.

Calves.

Food.

their calves are removed, I inflate their vaginas. I have known of *bussunto* among the cattle all my life. It comes every 3rd or 4th year and is gradually increasing in virulence. Those milkmen to whom I sell my milk, water it, and in order to thicken it, mix with it *singhara* nut flour.* (A Brahmin priest present stated that the milkmen continue to add water to the milk as long as they can without changing the colour). We know the disease *puschima*. The symptoms are,—hoven, shivering, refusal of food but no purging. This disease is not so common as *bussunto*, and I can't say how it originates.

BALARAM DAY'S STREET, Dairies.

Adulteration of milk.

* Trapa Bicornis.

Puschima.

ARGUN BAKOOLI, aged 34. I have 36 cows and two cow sheds, one containing 17 and the other 19. The sheds could not hold more. Last year, from Maugh (January) to Cheyt (March) *bussunto* appeared among my cattle, 13 were saved but all the rest of the 36 died. The whole of my cattle were ill. I lost Rs. 600 in cattle beside what we lost from having no milk for sale. The disease was generally prevalent at this time and was more severe than usual. After losing the cattle above referred to, I waited for about 2 months and then purchased a new lot. I had to borrow money to enable me to buy fresh cattle and I have not repaid the money as yet. I pay 24 per cent. per annum for the money borrowed. I have always suffered more or less loss from *bussunto* but especially within the last two years. The rinderpest season will come with the dry months, from Maugh (January) to Cheyt (March). When I lost so many cattle I cleaned the sheds with water and swept them out. As each cow died I had to pay the Hari bearers 1 Rupee for removing the carcass. I am of opinion that the disease *bussunto* originated in my sheds on that occasion.

Evidence of Argun Bakooli.

Rinderpest in 1870.

Loss from rinderpest.

Interest.

Removal of carcasses.

JADUB GHOSE, aged 40. I have 45 cows. Last Maugh (January) I had 44 cows, out of which I lost all but 24 of rinderpest (*bussunto*): my whole herd was attacked. I did not sell any of my cattle. Those which I lost, died within 3 months, *i. e.*, Maugh (January) Phalgun (February) and Cheyt (March). I lost from Rs. 500 to 700 at the time. There is no medicine for *bussunto* and I allow my cattle to eat whatever they fancy. When my cattle died I had to wait for 2 or 3 months until the disease was over before buying a new lot, which I did with money borrowed at 24 per cent. per annum interest. I have been at this trade for 15 or 16 years. I have not lost cattle from *bussunto* every year.

Evidence of Jadub Ghose.

Rinderpest in 1870.

Loss from rinderpest.

NEMY SHITANATH MARIK, aged 30. Number of cattle 19; my 2 sheds can hold 24; lost most of them last Cheyt (March) from rinderpest—*bussunto i. e.*, 11 out of 21 attacked; loss in Rs. 200 to 220. After this replaced the losses with borrowed money, for which I pay 24 per cent. per annum interest. I have been in the trade 5 or 6 years. *Bussunto* does not appear every year.

Evidence of Nemy Shitanath Marik.

Rinderpest in 1870.

MOTH BAKOOLI, aged 32. I have been a cow-keeper for 15 years. I have 18 head of cattle.

Last Maugh (January) 15 were attacked with rinderpest—*bussunto* and of these 8 died and three were sold. In the following Srabun (August) and Bhadur (September) I purchased new cattle with borrowed money. I lost Rs. 200 to 250 at the time.

Evidence of Moth Bakooli.

Rinderpest in 1869.

Losses by rinderpest.

Evidence of MR. T. L. TAYLOR, *Superintendent of the Municipal Gaokhana, taken 1st March* 1870.

Mr. T. L. Taylor.

Question.—Have you had any experience in regard to cattle plague?

Answer.—For the last 11 years I have been in charge of the municipal cattle: the first outbreak of plague that I can remember was in February and March 1859, since when it has been almost of yearly occurrence with the exception of the years 1862-63, but none of the outbreaks were as bad as that in 1859. My predecessor told me that there was a very bad outbreak in the year 1857, when the municipality lost nearly 200 head of cattle. An outbreak generally lasts for 6 weeks or two months, and generally makes its appearance about this time in February or March, though I have seen a few cases as early in the year as January. The natives say that the disease shows itself when the "Simal gach," the cotton tree, is in flower, just when the buds are beginning to burst.

History.

Mr. T. L. Taylor.

Question.—Have you had any outbreak of cattle disease lately among the cattle under your charge? and if so, could you give us, 1st, the number of cattle under your charge; 2nd, the number of those attacked; 3rd, the proportion of those which died?

Recent outbreaks.

Answer.—For the last two years I have had no disease among the cattle under my charge, but on reference to my papers I could give you the information you require, regarding the previous outbreaks.*

Question.—Of what breed are the cattle under your charge?

Breed.

Answer.—For the most part they are of the Bengalee breed, being got from the districts round about Calcutta; we have a few up-country cattle, but not many. The cattle used by us are now worth from Rs. 25 to 30 a head; 10 years ago the same cattle were worth from Rs. 12 to 15.

Question.—In what manner are your cattle employed, and please state in detail how they are housed, fed, and watered?

Work.

Answer.—All our bullocks are used for draught. They are worked on an average eight hours a day, that is to say, they go out at 4 A. M. and return from 11 A. M. to 3 P. M. They

Housing and feeding.

are housed at night in pucca sheds, open at the sides and well raised. They are fed once a day in the evening on gram and straw, 4 lbs. gram and 12 lbs. straw. They drink the river water out of a cistern as often as they like.

Question.—What is the condition of the cattle?

Condition.

Answer.—They are generally in low condition, owing to hard work and being so long without food.

Question.—Where do you obtain the cattle from?

Supply of Cattle.

Answer.—From the districts within a radius of 10 or 12 miles of Calcutta. They are mostly Brahminee bulls, brought in by men in our employ, who leave their service for a time and catch these animals. They are brought in in droves of 10 to 12 at a time. This practice is common with all firms requiring draught cattle. These animals are found roaming about loose and do a good deal of damage to crops: people don't object to their removal. They are brought in as required.

Question.—Do you remember any instance of these cattle being diseased when brought in?

Disease imported.

Answer.—I do not, but I hear that in the northern Gaokhana, Mirzapore, old Boitakhana Bazar Street, two or three of some bulls recently brought in, have shown signs of *gootee*, and one of them has died. Some 4 or 5 years ago, I remember cattle being brought in with foot and mouth disease.

Question.—Do you obtain cattle from any other source?

Markets.

Answer.—For the last 6 years a great number have been purchased at the fairs of Kidderpore, Oolooberiah, and Dum-Dum. These have never shown disease immediately or shortly after their arrival, but have become affected when the disease broke out.

Question.—What are the names of the murrains you have seen?

Names.

Answer.—Foot and mouth disease (*aishoo*) and *gootee*.

Question.—What are the symptoms of *gootee*?

Symptoms of *gootee*.

Answer.—Staring coat, ears drooping, head depressed, eyes and nose watering, mucous discharge from latter, eruptions in some cases occurring generally on the loins, fore shoulders, not on the belly. The eruption is dry, and in passing the hand over the skin it feels like hard pimples. In some cases I have altogether failed to detect eruptions or pimples of any kind in any place. There is purging of a violent kind, after the second day—very offensive and bloody. The tongue is swelled and protrudes, and the mouth is very sore. In some cases the skin has come off the inside of the lips and gums showing raw surfaces. The disease lasts from 2 to 5 days. Cattle showing an eruption generally die more rapidly than those which have none. Flies collect around the nose of a sick animal, and deposit their eggs inside. When cattle recover they are not fit for work under 6 weeks or two months.

Question.—When one animal becomes thus diseased, have you found that others are attacked similarly?

Infectiousness.

Segregation.

Answer.—Yes, sometimes one or more on the same or following day. Our plan now is to remove sick cattle at once to a shed in an adjoining compound. This practice has been in force for the last two years; previously, sick cattle were removed to Ballygunge about two miles distance.

* Mr. Taylor subsequently wrote that he was unable to obtain this information.

Question.—Are animals in good or bad condition more prone to take the disease ? Mr. T. L. Taylor.

Answer.—I feel assured from experience that well conditioned cattle are more liable to take the disease than lean cattle, and that the latter pull through the disease better. Liability.

Question.—How do you account for your cattle becoming affected by this disease ?

Answer.—1. I attribute it partly to the dome cattle, (those which remove dead carcasses) introducing the disease among the other cattle. I have kept the dome cattle apart from the rest for the last two years, and since then no disease has broken out. Origin of disease.

2. I think that the disease may be caught by the cattle removing or eating litter on the streets.

3. The disease also spreads by infection amongst our own cattle.

Question.—How are the carcasses and hides disposed of?

Answer.—All cattle dying in our yard are sent to the public skinning ghaut, where the hides are removed and taken over by contractors. The carcasses were formerly thrown into the river and now are disposed of at Dhappa. The contractor pays a yearly sum to the Municipality for the right of removing hides. Disposal of carcasses.

Question.—Have you any idea how the carcasses of other draught cattle in Calcutta are disposed of ?

Answer.—In the same manner. Sometimes a moochee will buy a carcase from a *garriwân* —cartman—and take it out of Calcutta, remove the hide and feast off the carcass.

Question.—How is the manure of your yard disposed of ? Manure.

Answer —In the dry weather the dung is caked and used for tightening wheels, on the premises. In the wet weather it is conveyed away along with other refuse matter.

Question.—Have you ever known of man being affected by cattle disease? Man.

Answer.—No, though I have seen men in constant attendance on sick cows.

Question.—Have you known of any other animals contracting the disease ?

Answer.—No, the municipal ponies stand in the same sheds and goats go about in the yard and sheds amongst the cattle, but I have not known of either being attacked. I have known of goats being affected with foot and mouth disease by infection from cattle. Horses.

Question.—Whose duty is it to inspect cow-houses in Calcutta ?

Answer.—It is the duty of the Overseers of the Conservancy Department.

The evidence of Mr. R. HARVEY, *Superintendent of the Municipal Gaokhana at Boitakhana,—4th April* 1870. Mr. R. Harvey.

I have been Superintendent of the Municipal Gaokhana at Boitakhana for the last 5 years. The stock under my superintendence consists of 100 head of cattle—bulls and bullocks, principally the former, and 160 country ponies. There are at present about 36 extra. The last outbreak of disease among the cattle was in February and March last. At present all the cattle are healthy : out of 5 affected, 2 died and 3 recovered. The disease was what the natives call *gootee* or *bussunto*. The symptoms are off feed, ears drooping, coat staring, animal dull, running from mouth and nose, no running from eyes which become sunk in the last stage. I never noticed any sore in the mouth. Purging watery stools or sometimes mucus sets in, in the last stage. They die after 2 or 3 days. I never noticed any eruption on the skin, I never observed the hair fall off or scabs form during the period of recovery. In 1867 the disease was very bad and the loss amongst the cattle attacked was 75 per cent.; the total loss being 30 or 35 in a herd of 100 head of cattle. In 1868 there was very little disease. There were also a few cases in 1869. I consider the disease to be very contagious. The practice has been that the sick cattle are separated from the healthy flock at a distance of 200 or 300 yards. The separation is complete as regards attendance food, drink, &c., &c. An animal that once gets the disease seldom or never gets a second time. I have observed that after a new batch of bulls has arrived, some of them become diseased both from *gootee* and foot and mouth disease. The dome caste bulls frequently become affected in consequence of their having to convey carcasses to the skinning ground. They are therefore kept separate and when one animal dies, the ground is *lepoed* and sprinkled with carbolic acid water. In the febrile stage, I give Tartar Emetic 2 drams, ginger powder 2 drams, nitrate of potash 2 drams, in a sufficent quantity of molasses to make a ball which is repeated twice a day until the fever ceases. If they are off feed I drench them with linseed tea or *salbod* water and give some tonics such as camphor or gentian. When the diarrhœa sets in, I generally give "gunja" or Indian hemp, 2 drams for a dose

Stock.

Rinderpest in 1870.

Symptoms in 1867, 1868, and 1869.

Separation.

Second attack.

New arrivals.

Dome cattle.

Treatment.

Mr. R. Harvey.

twice a day with tonics with nutritious food. In the last stage I give no medicine. I am not acquainted with the disease called by the people *puschima*. We get our supply of bulls from Baraset, Chooadangah and other places in that direction where our *garryowns* seize the bulls and bring them to the Gaokhana where we pay Rs. 5 for each animal. They have got instructions to take possession of the animal amicably and not to use force and when a Hindoo claims a beast, he is to let it go at once. Now no bulls are obtained for us on the west side of the Hooghly. I was not here in 1864. There have been 8 or 9 cases of foot and mouth disease among the new bulls during the last month, but they have all recovered. These were off work for 15 days. I use weak solution of blue stone or nitric acid and subsequently apply *linimentum æruginium* in foot cases. I try alum solution in mouth cases. I have never seen any purging in this disease.

Puschima. Supply.

Foot and mouth disease.

Treatment.

Present disease.

I have heard that disease has been prevailing in Manicktollah and Baboobagan. It has never happened that a bull with disease has been brought in from the interior. When the new cattle come in they are inspected by the Chairman of the Justices and they are then invariably in first rate condition and sent to mix with other cattle. When animals die, they are taken to the skinning ghat at Nimtollah and thence carried to the opposite side of the water where the contractor removes the skins, &c., &c., and the carcasses are subsequently thrown into the river. I never saw sheep being attacked with *gootee*. I have however seen sheep with discharges from the nostrils, but I never saw them purge. I have seen the chamars of my Gaokhana bringing in carcasses of cattle which have died and eating the meat thereof. The horses under my charge here never got *gootee*.

Disposal of carcasses.

Sheep.

Horses.

J. Stalkartt, Esq.

Evidence of JOHN STALKARTT, ESQ.,—21*st November* 1870.

Indian murrains identical with English.

I am of opinion that the rinderpest and most of the other diseases to which cattle are subject in England are identical with those of India, and the means to check and prevent them are much the same. With respect to rinderpest, the only means of prevention is slaughter of the first few animals in which it appears, and the segregation of the remaining portion of the herd from all other cattle for some time, till there is a certainty that the disease is stamped out.

Preventive measures.

Killing.

I prefer killing and burying the carcasses immediately, also burying their excrement wherever found, as well as some attempt to purify the cow-house or place in which they may have been lodged.

An objection might be raised that such a proceeding would interfere with the prejudices of the Hindoos, but this is a very shallow objection, considering that so many Hindoos eat beef in these days and sell their cattle for the purposes (well known) of slaughter; also that the Hindoos by their Shasters *should* slaughter cows at the Dewalee Pooja; but as cows are dear, they slaughter, or rather sacrifice buffaloes instead. Therefore, to meet all these objections, I propose that the Magistrates, in the outbreak of any disease, be authorised to purchase the animals diseased and liable to disease, and to deal with them as they may think fit. Should a large herd be infected, to purchase all which would, of course, be too much for the present finances of the country, such animals should be kept in the open fields and a cordon established as in England till they die or recover. A cow is too large and too troublesome an invalid to attempt to cure; besides that, the expense would be more than ten times the value of the cow. Next to be considered is the possibility of prevention. This is a very difficult question, for all the cattle of a village are, when not ploughing, entrusted to the village cowherd, whose duty it is not merely to drive them and take care of them, but drive them to some place where they can get something to eat. The zemindars have broken up the grazing grounds of each village—I may almost say of every village, and hence the great difficulty the cattle have in getting any thing to eat: they become emaciated from starvation, and thus extremely liable to the influences of any poisonous air.

Preventive measures.

Grazing grounds.

One would suppose that the villagers themselves would come forward and exert themselves; but no, they say that there is a curse upon the country; they are not permitted to enjoy the fruit of their own labours, and if they make a profit, they hide instead of enjoying it.

Gootee in Tirhoot in 1845.

I became acquainted with the disease called *gootee* in 1845. I was then an Indigo Manufacturer in Tirhoot. My factory was Bongong near Sectamaree. I had about 200 pairs of cattle. The disease broke out and carried off about three-fourths of them. With the exception of separating a few of the healthy from the sick, nothing more was done. Since then I have often lost cattle, but I have generally attributed the deaths to the chamars. They were suspected of either poisoning the animal or inducing disease. I now, as a rule, whenever an animal dies, have the skin slashed and the carcass buried so as to prevent the chamars deriving any benefit from the hide or flesh. There was an exhibition of cattle in 1864 at Belvidere, Calcutta. Disease broke out severely at this exhibition. I have heard several

Poisoning.

Exhibition of 1864.

accounts of the importation of the disease on this occasion; it was said to have been brought up from Madras from Mr. Floyd's farm and to have been owing to the tricks of chamars who are known to cause the infection of cattle in order to get their hides when they die. I was in England during the prevalence of rinderpest there. From what I heard of the disease then, I am of opinion that the *gootee* of this country is the same disease. I believe that the disease has always been in the country. I have heard planters from Jessore and elsewhere say so. I consider this disease to be one of the greatest hinderances to the improvement of cattle in this country. No sooner does a man try to improve the breed of cattle, than the disease comes and sweeps off the greater part of the herd. I consider the disease highly contagious. I consider all the diseases which affect cattle in this country identically the same as those which prevail in Europe. As regards the measures which I think ought to be adopted, in order to prevent the origin and spread of cattle diseases, I have put down my opinions on the subject in a letter which I now hand to you.* This letter contains all the suggestions which my experience in India has forced upon me. The butchers are driving the Brahmini bulls to Calcutta for slaughter. The ryots are thus compelled to employ very young bulls for breeding purposes, and even get them with difficulty. This deteriorates the stock. I advocate the system of "parish or village bulls", and I think that these should be bred and fed by the villagers. The people in my neighbourhood very frequently apply to me for the services of my bulls. Formerly there was an excess of Brahmini bulls, and they were a curse and nuisance to the country. Now there is scarcely one remaining in the district. I am satisfied that the ryots would gladly avail themselves of the service of special bulls. I do not advocate the introduction of English breeds into India; but rather the improvement of the country breeds. The Brahmini bulls of these parts used to be uncommonly fine animals. A bull can serve 50 cows in the year.

J. Stalkartt, Esq.
Origins of disease there.
History.
Contagiousness.
* Printed above.
Improvement of stock.
Parish bulls.

Question.—How would you propose to prevent the removal of the Brahmini or village bulls?

Brahmini bulls.

Answer.—Formerly the people were better off and able to afford the damage which the Brahmini bulls committed, and they were only driven off when there were too many of them, or became very mischievous; now the people are poorer and the Brahmini bull is driven off from every village and at last finds its way to Calcutta. There is no pasture, not even for cattle. I would have a certain proportion of the land retained for as a common pasturage, and the bulls and cattle generally grazed upon this land. I think there ought to be an agricultural Secretary or Department to look into this and kindred matters and protect and improve the agricultural interests of the cultivators of the soil. I think a small fee should be charged for the village bulls to defray the cost of their feed and forage. The three great points I would strongly urge are:—

1.—That the ryot should be secured and protected in the peaceable enjoyment of his land.

2.—That zemindars should be prevented from breaking up pasture land.

Pasture land.

3.—That the cattle should not be driven off the ryots' lands.

The old grazing grounds only brought 4 annas an acre. Now, as arable land, they are much more valuable.

I think there ought to be an inspector of stock for each district, or at any rate for every large district. Suitable men might be obtained from the medical schools. They might be sufficiently educated in veterinary matters, and have a small staff of *goallas* attached to them as an executive.

Evidence of RAJAH NARENDRA KRISHNA BAHADOOR, *recorded in Calcutta, 15th November* 1870.

MOORAGATCHA.
Narendra Krishna.

Locality.

My estate at Mooragatcha, 24-Pergunnahs, consists of 40 or 50,000 beegahs, and the soil is generally alluvial and fertile.

Breed and value.

The cattle on my lands are of the Bengali breed only, and their average value is about Rs. 15. The value of cattle in Bengal has risen nearly 25 per cent. during the last 10 years.

Uses of cattle.

Cattle on my estate are used for agriculture and burden, the agricultural season extending from April to July. Bullocks only are employed in agricultural operations, and cattle are on the whole well treated, being housed at night in thatched sheds raised about 1 foot from the ground, with mud walls and grass roof.

Feeding and watering.

A few cows are kept to supply milk for private use. The cattle are watered from tanks and fed on rice straw, chopped up with some oil-cake, and inferior rice pounded. The common grasses are called *khar* (খড়) *khol* (খোল) and *kunro* (কুঁড়ো).

MOORAGATCHA, Narendra Krishna.

Herding. Cattle are herded by day only in all seasons except during the rains when they are kept tied up. They are not driven for pasture to other districts, as there is a sufficiency of pasture in this district. The cattle are generally in good condition.

Stock how kept up. Imports. Special bulls are not retained for the purpose of keeping up stock, but there are Bengali bulls in every village. Cattle are occasionally imported from the Midnapore side of the river at a cost of from Rs. 10 to 40. Purchases are made privately and also in hâts (markets) within the district.

Export. Hide trade. Cattle are exported to Calcutta for slaughter by the butchers. The number of dealers in hides is about 200, but their number has decreased since the villagers were ordered by the police to bury their dead cattle. Hence moochees and others cannot now readily get hides. Hides are sold in the country for 1 rupee each, and the trade is conducted by moochees who take the hides to Calcutta, though sometimes purchasers go to them direct. My impression is that hide merchants make advances to the moochees in order to ensure a supply of hides against a certain date.

History of plagues. Cattle murrains have always existed more or less in this country but never to such an extent as in 1868, when a very severe plague raged in Diamond Harbour.

Season. *Bussunto* (Rinderpest) first breaks out spontaneously and then spreads by infection. This disease does not prevail in any particular season, but often appears in March. There has been none this year.

Statistics. In the year 1868, 75 per cent. of the cattle on my estate which were attacked with *bussunto* died, and only 25 per cent. recovered.

Liability. Strong healthy cattle were in 1868 most liable to be attacked with *bussunto*. Young and old animals were alike subject to the disease.

Symptoms. The symptoms were:—ears drooping when the animal was first attacked; appetite and rumination lost; when cattle began to eat they were out of danger; the tongue swelled. There was purging, the evacuations being mixed with blood and mucus; the milk was suppressed.

Contagiousness. This disease is in my opinion contagious.

Treatment. The native treatment consisted of sugar water, boiled rice in a liquid state, and green grass. I can't say what medicines were given.

Sanitary measures. No sanitary measures were adopted, and the carcasses of dead animals were buried only when special orders were issued through the police in the latter end of 1868.

Sick and healthy animals were kept in the same shed, as no one had two sheds. Hides were at first taken by moochees and sold, subsequently hides were not allowed to be taken.

Other animals were not affected with cattle plague and men are not liable to contract the disease. No disease prevails at present.

Rents. Ryots in 1868 could not pay full rent, but next year the crops were good and they were able to pay the arrears. I got 15 or 16,000 rupees less income in that year from my zemindary; some ryots did not pay any rent. No ryot was obliged to give up the land altogether. I did not press for payment when a true report of great loss was ascertained. In only one or two villages was there less land cultivated than usual. There used to be a great many mahajuns (money-lenders) on my property; but the ryots are better off now, and they are not so many. I don't encourage mahajuns. The rise in the price of paddy has enriched the ryots and enabled them to throw off the mahajuns to a great extent. The mahajuns advance money and take it back in paddy with great interest.

I charge no *Bhagaria jumma* (rent for right of skinning).

Question.—Is there any tradition or written notice of cattle disease in the old Hindoo writings?

History. *Answer.*—We have read of cattle disease, but I can't give the reference; I shall however inquire and endeavour to trace it.

Question.—What are the religious feelings of the people with reference to cattle?

Religious feelings. *Answer.*—The cow is a sacred animal, and still worshipped by Hindoo females. If a Hindoo kills a cow he is liable to penance and has to expend money in feeding Brahmins. This feeling is gradually vanishing, but the Hindoos would still strongly object to any compulsory slaughter of cattle.

MOORAGATCHA. Narendra Krishna.

I believe that the disease springs up separately in each village, and that an adjoining village may escape infection. I would thus hesitate to recommend any measures for preventing the entry of disease into a village, as far as I have had means of judging; but when disease does appear in a village, I would have the diseased and healthy cattle kept separate. I would have a separate house in the village in which the sick cattle should be placed and treated, and every cattle owner compelled to remove the sick to this house. I would have the carcasses burnt or buried.

Disease, indigenous.

Segregation.

Means of segregation.

Question.—How would the expense of this system be met?

Answer.—By subscription among the villagers; one or two cottahs in each village would no doubt be given up by ryots and zemindars for this purpose, and this would have to be enforced by some law. I think that the land should be permanently kept apart for this purpose, and perhaps enclosed, and a temporary shed erected whenever the disease made its appearance. No zemindar would object to giving a small patch of land for this purpose. If there was any difficulty about the matter, the ryots might pay the rent of this. The village mundul might be made responsible for the immediate erection of a hospital shed on the appearance of disease. The mundul of the village should also be responsible for immediate report of the outbreak being given to the Police. If he does not give immediate notice, a small punishment would make him more careful.

Baboo Degumber Mitter.

Information furnished by BABOO DEGUMBER MITTER,—*Calcutta, 16th November* 1870.

Locality and area.

I have estates in Cuttack, Jessore, and 24-Pergunnahs, of which the area is as follows:—

40,000 acres in Cuttack.
7,000 „ „ Jessore.
13,000 „ „ 24-Pergunnahs.

The soil varies, being clayey, sandy, mouldy, or alluvial.

The number of cattle on my estates can be roughly estimated if we suppose that 10 beegahs (= 3 acres) of land can be cultivated by a pair of bullocks. The cattle are only of one breed, *viz.*, Bengalee. Their average value varies from Rs. 5 to 30 or 35. During the last 10 years the value of cattle has increased by 25 to 30 per cent. The causes of this are—

1. The increased use of cattle for food.
2. Money has become cheaper and the value of all produce has increased.
3. Agricultural operations have been extended.
4. The demand for cattle has increased.

I do not think that disease has affected the market generally or permanently, though it may do so locally.

Uses.

Cattle are mostly used for the plough; three-fourths are used for agricultural purposes, and one-fourth for gharries, pack, and dairy.

Mode of housing.

Cattle are always housed at night in sheds with mud walls and thatched roofs.

Mode of feeding.

Cattle used for agriculture are stall-fed. They get rice, straw, and oil-cake three times a day. There are grazing grounds, namely, paddy fields, when the crop has been removed. During the rains also they are stall-fed. There are no common grazing grounds kept specially for grazing purposes. This is only possible in high lands; cattle are let loose and herded during the day, and those of different villages mix together.

Cattle are not herded and driven for pasture to other districts. Their general condition is good. During the rains, however, while they are confined and stall-fed they fall off.

Stock, how kept up. Breeding.

Every village breeds its own cattle, there is no *system* of breeding. Brahminee bulls are let loose and they serve the cattle.

Cattle are locally purchased by the people, but not imported from other districts, or at least very seldom.

Hats, markets, &c.

There are cattle markets in the neighbourhood of Calcutta, but not in the interior of districts. Private purchases take place at village punchayets. This is the case all over Lower Bengal.

Goallahs collect cattle from country districts and sell them to the butchers. Beparees also collect cattle for sale at markets.

Baboo Degumber Mitter.

Carcasses are thrown into the *bhagar*. The moochies remove the hide and make shoes, &c.

Export of hides.

The surplus hides are sold by them to local dealers. These sell to pykars, who are general agents working on a large scale. These men advance money on a *hât chita* (note of hand). I am not aware that any poisoning of cattle goes on in my zemindary. No complaints have been made to me on that score, and I have issued a circular to my naibs that no *Bhagaria jumma* is to be taken.

The moochi of the village, who has a right to remove the skin of dead animals, is expected to make a present of a pair of shoes to the head man of the village.

Mortality among cattle.

I cannot say exactly what the mortality from plague generally is, but I should say that in a shed or portion of a village attacked by plague, two-thirds of the cattle are lost.

History of plagues.

My memory does not carry me back beyond 20 years. I think cattle disease is worse of late years, that is, more frequent, tedious, and widespread.

The only plague I am acquainted with is *bussunto*. *Aishoo*, or foot and mouth disease, breaks out in the beginning of the rains, and embarrasses the operations of the ryots greatly.

Bussunto generally breaks out in February and March.

All kinds of cattle are equally liable to be attacked with *bussunto*.

Symptoms.

In *bussunto* an eruption breaks out on the skin, and the more copious the eruption, the greater the chance of recovery.

Blood is passed from the bowels, and a copious discharge marks a severe type of disease.

Contagion.

I consider the disease to be contagious, but I am not quite certain about it. I think there is something arising from the soil which contaminates the atmosphere and so gives rise to the plague.

Treatment of *bussunto*.

Ghee is generally given to animals attacked with *bussunto*, and conjee and other soft food is also administered.

No medicines are employed. Ghee is considered beneficial.

No separation of sick and healthy cattle is allowed in Cuttack *on principle*. This principle is a religious one. They are afraid that by separating the cattle they will offend *Sitla*.

As regards separation, in order to secure the good will and co-operation of the villagers, the practical advantages of separation would have to be proved and demonstrated to them. There would be no difficulty in getting a little land for the purpose of erecting a hospital or place for housing sick cattle. In the other districts separation to a certain extent is practised.

Sanitary measures.

The carcasses of dead animals are not buried.

Horns and hoofs.

The horns of dead cattle are sold. There is a large trade in buffalo horns, but none in hoofs.

Other animals are not liable to be attacked with *bussunto*, and I have never observed the coincidence of epidemics and epizootics.

There is some disease at present in *Cuttack*. Two or three villages were attacked severely in March, and I have had reports of its having again broken out lately.

Mr. R. Sheriff.

Information furnished by MR. R. SHERIFF *regarding the cattle disease at Port Canning* (21 *miles from Calcutta*) *and its vicinity during* 1868-69.

Locality.

The Port Canning Zemindaree includes a large tract of land in the Soonderbuns, but I cannot give its exact extent. It contains over 7,000 cattle, chiefly

Price.

of the Bengalee breed, and worth at the present time about Rs. 10

Hides.

each. Ten years ago they were worth about Rs. 5 each only. There are no chamars on this land; no hides are sold, the animals being disposed of with their hides. The cattle above referred to are used for agricultural and dairy purposes, and also for burden, but not for draught purposes, as there are no carts.

Agriculture.

They are worked hard from June till September in mud or water, over six hours a day in the *Amun Dhan* cultivation, when they are turned loose to feed themselves as best they can. They are not brought in for the night, and no food of any sort is given them.

Mr. R. Sheriff.

Housing. No sheds of any sort are put up for cattle as a rule; indeed it is the exception if there are such.

Herding. From January till June cattle are allowed to go about at will; from June till September they are hard at work. From September till January they are sometimes fed a little, so as to prevent them going into the paddy.

Feeding. The grass on which they feed is for the most part rank *dhoob*,

Watering. and no grain of any sort is given them; the water they drink is all obtained from rivers or tanks, as there are no wells of any sort. Cattle also feed on *Buksah* grass, which is nutritious, but the early shoots after the rain are purgative.

The cattle during the rains get into deep water, and feed on the shoots of the grass which float on the top.

Condition. The cattle are herded in lots of 2 or 300, and remain in the locality all the year round, but no herds from other parts are brought to graze. They are for the most part in good condition, except after the hard working time, *i. e.*, after September, when they are in bad condition from work; and when there is, to a certain extent, a scarceness of food, owing to the extent of land under cultivation.

Breeding. The stock is kept up partly by breeding, but the number reared is not sufficient to meet the demand, and many are imported from the hâts in the vicinity of Calcutta. In the last two years 1,000 to 1,500 have been so imported at an average of Rs. 10 each. Cows are not put to any particular bull, and no selection of males is attempted.

Importation. Markets. There being no markets in the locality, cattle have to be bought elsewhere, though there is an interchange amongst the ryots themselves. Cows are used as much for agricultural purposes as bullocks, and can do as much work; whilst a barren cow is worth twice as much as a bullock, and will do twice as much work.

Exportation. No systematic exportation of cattle is carried out.

Mortality. As a rule, the cattle are very healthy, but during the plague from 38 to 40 per cent. died of *puschima* and *gootee*. From *gootee* alone only 5 per cent. died. No deaths occur, or hardly any, from foot disease.

History. Plagues prevailed both in 1868 and 1869, but no other disease occurred except *puschima* or *gootee*.

Source of disease. Plague always followed a fresh importation of cattle, even if two or three new ones came in. Though there was nothing the matter with them when they came, they were always the first to show disease, and it then spread to the others if those affected were not at once removed.

No disease breaks out except when imported cattle come.

Season. Disease shows itself from May to July, as that is the time during which the fresh cattle are imported. They are rarely imported at any other time, but if they are, though they come from the same markets, no disease seems to follow.

Puschima and *gootee*. *Puschima* and *gootee* appear at one and the same time, *i. e.*, from May to August: not one without the other. *Puschima* shows itself by swelling of the tongue and throat, whilst in *gootee* an eruption appears on the body. An outbreak will last from May to August, *i. e.*, during the time of importation.

Statistics. Of those attacked with puschima, not 10 per cent. recovered. In 1868 about 500 out of the 7,000 were attacked with either *puschima* or *gootee*, and in 1869, 800 out of the same number.

Liability. Both sexes were equally liable to be attacked, but young stock are not so liable to contract the disease as those from two years old and upwards.

Condition did not seem to have any effect either way. Calves were in some cases apparently affected by their mother's milk.

Symptoms. The symptoms of *gootee* are—rough coat and body covered with pustules, which contain matter after the third day. These pustules appear chiefly on the stomach and udder; eyes, nose, and mouth water; gums are inflamed or tender and ulcerated; body very hot 24 hours after first attack; bad cough; when mouth was opened a great deal of panting; great restlessness; quick breathing; did not notice any shivering; no swelling of the throat visible; breath and discharge from the mouth

Mr. R. Sheriff.

very offensive; diarrhœa after third day: fæces pultaceous fœtid, green (like chopped grass), and discharged with great force (3 or 4 yards sometimes); the more advanced the case, the further the ejection; did not observe blood.

Cows wish to drink, but cannot; no appetite, no chewing of cud from first day; symptoms of hoven about third day severe.

Puschima is characterised by exactly the same symptoms as *gootee*, except that the throat swells internally; there is no eruption; diarrhœa sets in sooner and the disease proves more rapidly fatal (4th or 5th day, *gootee*, 8th to 11th.)

Puschima.

I am of opinion that both *gootee* and *puschima* are very contagious; I know of two healthy grants of land where disease broke out on the introduction of a single bullock, which first took ill, and then infected others, which died.

Infectiousness.

Imported cattle did not get the disease so severely as the old stock. No treatment was attempted except in five cases, where brandy and pepper were given, in the proportion of a handful of black pepper to half a bottle of brandy.

Treatment.

No sanitary measures, such as burial or disinfection, were adopted, and not even segregation. Hides, horns, and hoofs were not removed, no Chamars being allowed in the place.

Sanitary measures.

Sheep and goats were not affected, nor buffaloes; no more were horses. I am not aware of human beings ever being affected. I have not heard of the existence of any cattle disease at present.

Other animals.

There are no high lands in the neighbourhood, and the country is inundated for at least five months in the year.

The diseases above referred to do not seem to be affected by changes in the climate.

Diamond Harbour.

Diamond Harbour, 4th November 1870, 2 *p. m.*

BROJO KISSORE GHOSE, 25 years old, a resident of Korojolee in Diamond Harbour Sub-division, says:—I am a cattle owner, and always keep 30 to 35 head of cattle in my house. I know the disease *gootee*, which is also called *bussunto* when attacking cattle. I saw this disease in the years 1867 and 1868. Previous to this time I had seen one or two like cases. My father told me that he has seen the disease from his boyhood, and that it has been in this part of the country from time immemorial. There are always one or two scattered cases here and there, but the only severe outbreak that I met with was in 1867 and 1868, and on account of this severe murrain a six-anna portion (37 per cent.) of arable land could not be brought under cultivation during these years. At this time I heard that two or three families belonging to the village of Bopor (I forget the names of the people) were totally ruined partly from loss of stock and partly from their inability to sow their land. These families had either to sublet a portion of their land or relinquish it into the hands of the landlord. The death-rate at the time of the severe outbreak was 80 per cent. of the number attacked. In those cases which occur sporadically, when the disease has not assumed an epizootic form, I do not think more than five or six per cent. die. Generally speaking, in the sporadic form, or in those cases occurring at a time when the disease has not assumed an epizootic form, very often the cattle affected do not entirely lose their appetite, and do not, as a rule, purge, but in such cases eruptions on the skin are almost sure to make their appearance. The animal generally gets well. When purging takes place and there is no eruption it is nearly always fatal. I am inclined to believe that cattle poisoning was not practised here during the outbreak of murrain in 1867 and 1868, but I have heard of cattle being poisoned occasionally by the moochees. Cattle owners can easily detect the difference between the symptoms of cattle poisoning and *gootee*. Cattle die in from four to five hours from the effects of poison, whereas a case of *bussunto* dies in from three to seven days. I have heard of a disease called *puschima*, but it comes on rarely. I have never seen it.

Rinderpest in 1867-68.

History.

Effect on cultivation.

Mortality

Mild outbreaks.

Cattle poisoning.

The deponent concludes,—I am thankful to Government for sending the Commission in order to prevent, if possible, future losses.

NOBIN CHUNDER CHATTERJEE, 28 years old, a resident of Dhera, states:—I am a cattle owner, and have always in my house five or six head of cattle, partly for milk and partly for cultivation. I have had *bussunto* among my cattle in the year 1868

and the year previous. I never saw the like disease on a previous occasion, but I have heard on good authority that there were scattered cases of *bussunto* here and there before 1867. Now there are one or two sporadic cases of purging here and there at times. We consider *bussunto* to be an infectious disease, and therefore we have been separating the sick from the healthy cattle by removing the sick from the common cow-house to another building in the same compound. I had at the time of the outbreak of 1867-68 six head of cattle, all of which took ill, but I lost two head of cattle. I fed the sick cattle with buttermilk, and rice gruel; they could not eat grass or straw. I am aware of no cases of total ruin falling upon a family from loss of cattle.

Rinderpest in 1867-68.

Infectiousness.

Separation.

Treatment of sick.

STOUBOR CHUNDER SIRCAR, 51 years old, a resident of Malloo:—I am a farmer and hold 7 to 800 beegahs of land. I have always kept 28 to 30 head of cattle in my house. I have seen the disease *bussunto* that raged among cattle in this sub-division in 1867 and 1868. The attack in and about my village was however mild, and three of my cattle which had taken ill recovered. The symptoms were sore feet and sore mouth. I have heard of deaths occurring among cattle in other places.

Foot and mouth disease in 1867-68.

BHABOO KHAN, 60 years old, resident of Hogela, Debeepoor:—I am a cattle owner and have always had a large number of cattle. In 1867 and 1868 there was an outbreak of *gootee* amongst the cattle in our part of the district: one of my cows took ill, and soon after I separated it from the herd. That animal died, but the others escaped; these I had also removed to a house 100 feet distant from my place. The cow that died had bad cold at the first, and then purging watery stools, refusal of food, and death ensued on the second day.

Rinderpest in 1867-68.

Segregation.

Effect of the measure.

SHOBANUNDO PROMANICK, 27 years old, a resident of Poroolia:—I own 30 head of cattle and am a farmer. Last year my cattle suffered from *bussunto*, and the four that had the attack recovered. All had eruptions on the skin, and they did not purge much. My village cattle did not suffer from the murrain of 1867 and 1868.

Rinderpest in 1869.

Mild form.

DWARIKANAUTH HALDAR, 58 years old, an inhabitant of Mothoorapoor:—I am an agriculturist and own eight head of cattle. In the years 1867,1868 and 1869 my cattle had the disease called *bussunto*; they had sore feet and eruptions on the skin; all my cattle recovered.

Rinderpest in 1867-68.

TOMEEZOODDEEN JEMADAR, 35 years old, a resident of Chundnuggur:—In the year 1867 there was an outbreak of a disease which we call *bussunto* among my cattle, six in number, of which four died and two recovered; the symptoms were dulness, drooping of ears, purging blood and watery matter, coat staring, and death in seven days. After recovery the skin peeled off. I have owned from the time of the outbreak 29 beegahs. In consequence of the loss of my cattle, five beegahs of land remained fallow: my relatives also lost about seven head of cattle from the same disease.

Rinderpest in 1867.

Symptoms.

Effect on cultivation.

MOTHOM WODOCK, 38 years old, a resident of Compoor, states:—At the time of the cattle disease, *i. e.*, in the year 1868, I had 18 head of cattle, of which 17 took ill of *bussunto*, 9 died within a fortnight, each case lasting for 4 or 5 days, and the remainder recovered. The symptoms of the disease were drooping of the ears, body cold, mouth and eyes watering, purging after 2 or 3 days blood, and very offensive stools, refusal of food, and eruptions on the skin. I have never seen the disease called *puschima*, but I have heard of its appearing occasionally in the village and killing the affected animal in a day. There are no other symptoms except swelling out of the stomach, and when purging sets in the animal recovers.

Rinderpest in 1868.

Loss.

Puschima.

DOORGARAM SIRDAR, 50 years old, a resident of Ramchunderpoor, says:—In the year 1868 my cattle, consisting of 4 animals, took ill of *bussunto*; 2 died and 2 recovered. I have never seen any previous outbreaks of the like disease; the symptoms are drooping of ears, eyes and mouth watering, body cold, purging and death in 5 or 7 days. I have seen the disease *puschima*; it consists of a swelling of the belly. In such a case the affected animal dies within the day. I cannot say whether *puschima* is infectious or not; it appears on some rare occasions, but *bussunto* is infectious.

Rinderpest in 1868.

Puschima.

Infectiousness.

DIAMOND HARBOUR.

MADHUB CHUNDER BABOO, aged 48 years, a resident of Potduta, says:—I and my brother have always had 10 or 12 head of cattle. In 1868, 6 of these took ill of *bussunto*, of which 2 died and 4 recovered. The disease prevailed in my village, but not very severely.

Rinderpest in 1868.

DINONATH BOSE, 45 years old, a resident of Rutnessurpoor, deposes:—In 1868 cattle disease named *bussunto* made its appearance in my village and in the very many villages around me, and killed a good many cattle. I had 9 head of cattle, all of which took ill, but only 2 died; the remainder recovered. The symptoms were refusal of food, purging bloody stools, drooping of the ears, and death in 5 or 6 days. I have never seen *puschima* disease.

Rinderpest in 1868.

VISITED PAROOLIA VILLAGE, two miles distant from Diamond Harbour. Saw a cow 5 years old (2 calves) ill 7 days, discharge from eyes, nose, and mouth, particularly viscid from nose, congestion of gums and buccal pappilæ, 2 or 3 faint streaks of excoriation, and in one streak a very slight appearance of aphtha, coat staring and here and there eruptions, but not well marked. The discharge from the nostril is so viscid that the animal experiences great difficulty in breathing; mucous membrane of vagina congested, but no aphtha; udder and inside of thigh and arms carefully examined, but no eruption found. Has been purging watery stools for three days; the bowels have somewhat improved since yesterday; no blood has been observed. In another house in the village four others had been affected with a like disease, but they recovered a month ago. In another village, Abdolpoor, the disease called *bussunto* is still raging, and it has been so for the last three months. The number of deaths is upwards of 100. There is also disease in the village of Macalal, one mile distant from this place. The cattle of Kustcofot are still suffering; the Cofots have lost 5 or 6 head of cattle. There was disease in the neighbouring hamlet. The loss of cattle there can be estimated at 100, if not more. The disease prevailed there two months ago, and was bad in August and September last.

Paroolia village.

Case.

Rinderpest in Abdolpore.

Rinderpest in Macalal.

Rinderpest in Kustcofot.

The informant Ramdhun Mandal gives the above information.

VISITED MACKALAL, one mile distant from Diamond Harbour. Saw a bullock 7 or 8 years old, condition fair, 4 days ill; commenced purging from this day, liquid stools, no blood, slight discharge from eyes and nose, borders of gums around teeth congested and slightly excoriated, eruption on the body, coat staring, not eating anything. Giving ripe plantains and sugar water. Disease commenced in this village from September last, and one man has lost 6 head of cattle; others have lost their cattle also; one Soorjee Coomar lost 2 and Mullick lost 3 head.

Visit to Macalal village.

Case.

Treatment.

Losses.

Information furnished by the people of Kulpee on the subject of recent and past Murrains, recorded by BABOO R. D. MOOKERJEE *on the 9th and 10th November* 1870.

1. RAMDHONE MONDUL, of Doorganuggur, near Kulpee, caste Koyburto, aged 36 years, a cultivator of land and cattle owner, says:—

I have six head of cattle, all of which were attacked with *bussunto* in 1868. One only died and the rest recovered. The symptoms of the disease were—skin cold, bloody stools, shivering, drooping of ears, &c. The duration of the disease was between 10 and 15 days, and the deaths above-mentioned occurred within 6 days. I have 15 beegahs of land. Of this, one beegah and a half remained *potcet* (fallow), owing to disease having attacked my cattle. In my village about 300 cattle were attacked with disease in 1868, and of this about 80 or 90 cattle died, but none of the villagers were wholly ruined on account of the loss of cattle. Before 1868 I never saw any cattle disease, but I have heard that such disease broke out among the cattle before that year, though the deaths were not so numerous. No disease occurred in our village after 1868. The death-rate among the cattle in our quarter in the above year was 25 per cent.

Rinderpest in 1868.
Loss.
Symptoms.

Effect on cultivation.
Statistics.

History.

2. BHOYRUB MISTREE, of Doorganuggur, caste Dhupi, aged 60 or 65 years, cultivator of land, washerman, and cattle owner, says:—

Rinderpest in 1867-68. I had eight head of cattle in 1867-68, all of which died of *bussunto*.

I have 25 beegahs of land, half of which I cultivated in 1868 and the rest remained uncultivated. After half of my land was ploughed, my cattle fell sick and died, and I could not cultivate the remaining land for want of cattle. The symptoms of the disease were,—coldness of the skin, bloody stools, shivering, &c. The sick cattle did not eat anything during the period of illness. In my neighbourhood about 40 or 50 cattle fell sick, and nearly all died, with the exception of from 5 to 10 only. I bought only one bullock afterwards and sublet my lands, having no means to buy cattle or carry on cultivation. Balukdas Byragee lost all his cattle in the above year, and is now in jail.

Effect on cultivation.

Symptoms.

History. I never saw or heard of *bussunto* disease among the cattle before.

3. MADHUB SADOOKHAN, of Kulpee, caste Kulloo, aged about 45 years, cultivator of land, and oilman, says :—

In 1868 I had nine head of cattle, all of which died of *bussunto*. The deaths took place within from 7 to 12 days. The symptoms were,—watery and bloody stools, skin cold, watering from mouth and nose, &c. I estimate the number of cattle in my village at 300 or 350, out of which 150 or 200 fell sick, and about 100 died. Few lands remained fallow, as the people bought new cattle for agricultural purposes. I never saw the diseases *puschima* or *bussunto* before, but I have heard that these diseases did occur before, though to a smaller extent, and the death-rates were not high. No ryot in my neighbourhood was ruined on account of the loss of cattle.

Rinderpest in 1868.

Symptoms.

Statistics.

Cultivation.

History.

4. KALLY SHEIK, of Kulpee, aged about 50 years, cultivator of land, and cattle owner, says :—

Rinderpest in 1868. Two cattle died in my house in 1868 of *bussunto*.

There were in my village about 300 or 350 cattle, out of which about 150 fell sick and about 100 or 125 died, and the rest recovered. I have 14 beegahs of land, out of which about 3 beegahs remained fallow owing to the sickness and death of my cattle. No ryot was wholly ruined by the loss of his cattle. About $\frac{3}{16}$ths or $\frac{4}{16}$ths of all the land in my village remained uncultivated in the above year. I never saw or heard of *bussunto* before in my neighbourhood. I have seen *puschima* disease before. The chief symptom was swelling of the belly. The present disease *bussunto* is of a different kind, its symptoms were bloody stools, watering of mouth, skin cold, disinclination for food, &c.

Statistics.

Cultivation.

Puschima.

Symptoms.

5. OBHOY HALDAR, of Kulpee, caste Kyburto, aged about 30 years, cultivator of land, and cattle owner, says :—

In 1868 I lost four head of cattle by *bussunto* and two recovered. The symptoms were, —bloody stools, watering of mouth, skin cold, &c. The deaths happened within from three to five days, and the recovery was effected in from 20 to 25 days. There were about 300 or 350 cattle in my village that year. Nearly all fell sick, and about 150 died and the rest recovered. I had 11 beegahs of land, half of which I could not cultivate owing to the loss of cattle. No ryot was wholly ruined in our quarter. About 4 or 6 annas of land remained uncultivated in my village. I never saw this disease before, but I heard that rare cases of *bussunto* did occur among the cattle, and the mortality was small. I never saw the disease called *puschima*. No particular treatment was adopted, but the goddess *Shitolah* was worshipped.

Rinderpest in 1868.

Symptoms.

Statistics.

Cultivation.

Puschima.

6. PROBHORAM HALDAR, of Bhogobanpore near Kulpee, caste Koyburto, aged 60 years, cultivator of land, and cattle owner, says :—

In 1868 I had ten head of cattle; about six fell sick and died, and the rest, though also attacked, recovered. The symptoms were bloody stools, watering of mouth, skin cold, &c. The disease was *bussunto*. I have about 60 beegahs of land, out of which about 5 to 7 beegahs remained uncultivated in 1868. There were about 200 or 250 cattle in my village, out of which about 150 or 175 fell sick, and about 100 or 125 died, and the rest recovered. No ryot in my village was wholly ruined owing to the loss of his cattle, but about $\frac{4}{16}$ths of the land was left fallow for want of cattle. When I was 15 or 16 years old, I saw one or two cases of cattle disease, but the symptoms were not at all the same. The cattle did not eat, and there were no eruptions on the skin. I did not see any eruptions on the skin in 1868. I never saw *puschima*. In 1868 I did not try any regular treatment, but worshipped the goddess *Shitolah*.

Rinderpest in 1868.

Symptoms.

Cultivation.

Statistics.

History.

Puschima.

DIAMOND HARBOUR.

7. KARTICK HALDAR, of Bhogobanpore, caste Kyburto, aged about 36, cultivator of land, and cattle owner, says :—

Rinderpest in 1868. Statistics. Symptoms. Cultivation. History.

In 1868 I had six cattle, two of which died of *bussunto* and one recovered; the remaining three did not catch the disease. There were in my village that year about 200 or 250 cattle, out of which about 150 fell sick and about 90 or 100 died, and the rest recovered. The symptoms of the disease were,—general aversion to food, watering of mouth, nose, bloody and loose stools, skin cold, &c. The deaths took place within five or six days of first attack, and recoveries in 20 or 25 days. No treatment was attempted. I had ten beegahs of land, out of which about three beegahs remained uncultivated for want of cattle. About $\frac{4}{16}$ths of all the land remained uncultivated for loss of cattle. No ryot was wholly ruined in our village from the loss of his cattle. I did not notice whether there were eruptions on the skin of sick animals; did not see them. I never saw any such disease before, but I heard that there were rare cases in past times. The past disease was also called *bussunto*, but I cannot say what were the symptoms.

8. PRETRAM HALDAR, of Kamarchuck, about one mile on the east of Kulpee, caste Pode, aged about 60 years, cultivator of land, and cattle owner, says :—

Rinderpest in 1868. Symptoms. Statistics. Cultivation.

I had eight cattle in 1868, out of which four fell sick and died, and the remainder did not catch the disease. The disease was called *bussunto*; some called it cholera. The symptoms were,—watering of mouth and nose, loose and sometimes bloody stools, skin cold, &c. There were no eruptions on the skin. The diseased cattle did not eat anything. There were about 50 or 60 head of cattle in my village, out of which 25 or 30 fell sick and 28 died, and two only recovered. I have about 12 or 14 beegahs of land, out of which about 2 beegahs remained uncultivated for want of cattle. No ryot was wholly ruined in my village from the loss of his cattle. About 25 beegahs of land remained uncultivated out of 100 or 150 beegahs in the whole village. I never saw any such disease before, nor did I ever see *puschima*.

9. BODON HALDAR, of Kulpee, caste Koyburto, aged 60 years, cultivator of land, and cattle owner, says :—

Rinderpest in 1868. Symptoms. Cultivation. Statistics.

I had 16 cattle, 15 of which died in 1868 of *bussunto*, the symptoms of which were,—aversion to food at first, swelling of the belly, and then watery and bloody stools, shivering, and skin cold. The remaining one was diseased also, but recovered. The symptoms were the same, and yet it recovered after a month and a half. My cattle died in from 6 to 10 days. I have 30 beegahs of land, half of which I cultivated in 1868 by borrowing cattle, and the other half remained fallow. I have since bought one bullock, and relinquished a greater portion of my lands. In my village there were about 300 or 350 cattle, out of which about 200 or 250 fell sick, and about 150 or 175 died. No ryot was wholly ruined, but many became poor owing to the loss of cattle. About $\frac{1}{4}$th of the entire lands of the village remained uncultivated. There were no eruptions on the skin. I never saw any such disease before, but I heard from my father that *gootee* broke out among the cattle before, though the cases were rare, and there were not many deaths. I never saw *puschima* before.

10. LOLLCHAND HALDAR, of Kulpee, caste Charal, aged about 50 years, cultivator of land, and cattle owner, says :—

Rinderpest in 1868. Symptoms. Cultivation. Statistics.

I had four cattle, three of which died in 1868 of *bussunto*. There were no eruptions on the skin, and the symptoms were,—watery stools, watering of the mouth and nose, and general aversion to food. The remaining one of my cows was also diseased, but it recovered after a month's illness. The deaths occurred within six to eight days. I had 10 beegahs of land, two of which I could not cultivate on account of the sickness and death of the cattle. About $\frac{1}{4}$th of the whole land remained fallow for want of cultivation, owing to the loss of the cattle. About 300 cattle fell sick in my village and adjacent places, out of which 150 or 175 died. No ryot was wholly ruined owing to the cattle disease, but many suffered a good deal. A portion of land belonging to each ryot remained fallow. I never saw this disease before in my life. I have heard that occasionally such cases did occur, though very seldom. I never saw the disease called *puschima*.

11. MODHOO CHRISTIAN; of Kulpee, convert, aged about 45 years, cultivator of land and cattle owner, says:—

Rinderpest in 1868.

Cultivation.

I had four cattle, three of which died in 1868 of *bussunto*. The symptoms were,—general aversion to food, watery and bloody stools, watering from the mouth, and cold skin, no eruptions appeared on the skin. I held 8 beegahs of land, 6 of which I cultivated and 2 remained fallow for want of cattle to plough it. About ¼th of all the land remained uncultivated owing to the sickness and loss of cattle. There were in Kulpee about 300 or 350 cattle, out of which about 200 fell sick and about 150 or 175 died of the disease. No ryot in my village was wholly ruined by the loss of his cattle, but every one suffered from not being able to cultivate all his land, and several ryots' holdings were taken from them by the zemindars and re-settled with others. I never saw this disease before in my life, nor the disease called *puschima*. *Bussunto* is not called by any other name in our neighbourhood.

Evidence of BABOO SUMBHOO CHUNDER GHOSE, *recorded by* BABOO HEM CHUNDER KERR *on the 20th November* 1870.

BABOO SUMBHOO CHUNDER GHOSE, of Ceronjolee, in 24-Pergunnahs, states:—I am a land proprietor and an agricultural farmer.

Rinderpest in 1866.

Origin.

Spread.

Symptoms of *bussunto*.

Duration of outbreak.

Effect on agriculture.

I have always owned 30 to 35 head of cattle. In the month of Falgoon (February) or Cheyt (March) 1273 B. S., the Tewars of the village of Boshor, about two miles distant from my house, purchased 12 or 13 bullocks at Oolooberiah haut, and four or five days after their arrival at home, one of the new batch showed symptoms of the disease known in this part of the country as *bussunto*, and the other cattle in their house, both new and old, then got ill, and gradually the disease spread from one place to another. The symptoms of the disease are,—first, fever and refusal of food, then watery discharge from eyes, nose, and mouth, coat staring, excoriations in the mouth, and purging watery stools mixed with blood and pus-like matter and small bits of flesh. In some cases I have seen eruptions of the size of a pea on the body, and in others the hair merely stood on end, and if any of the affected animals got better, the outer skin, in some cases, would come off. A sick animal generally sank in five to seven days, and if it recovered, it would take 15 to 17 days. The outbreak continued for upwards of two years, and the agricultural masses suffered much, inasmuch as they not only lost their cattle in numbers, but had to give up cultivation of one-fourth of their holdings.

Infectiousness.

Treatment.

Segregation.

Disposal of dead.

Hides.

Cattle poisoning.

The disease is infectious, and yields to no medicine known. I myself took much care of my cattle at this time, and out of 20 head of cattle attacked, I lost only three. I used to feed my cattle with green and soft *culmee sak*,* and drenched three or four times with rice gruel. I used to clean the cowshed twice, and I removed the healthy to another room, though in the same compound. I did not use any medicines, nor did I know of any. People in every part of the country knew the disease to be contagious, and the disease was everywhere, and they could not think of separating the healthy from the sick. Besides, they had no means of doing so. The cattle, as a rule, graze during the day in the fields, and are kept in the house at night; but during the epizootic, people did not follow this practice freely, and sick cattle were never taken out of the house. At the commencement of the disease, carcasses were thrown into the village *bhagar* as before, but latterly on receipt of orders from the authorities, those who could afford, buried them, and those who could not, threw them into the river or canal. The moochees, in the event of the dead bodies being thrown into the *bhagar*, took the skin as they had always done. I am not aware of any assessment upon the *bhagars*. The moochees make no returns to the zemindars. I did not suspect any cattle poisoning at the time of the plague; but six months after the disappearance of the disease cattle poisoning was suspected, but the villagers and zemindars watched the moochees, and the suspicion was removed. In fact, a few cattle died of what I think to be poison.

Hide trade.

The moochees use either *sunko* or *darmoj* poison, and they tie it up within plantain leaves, the poison being first rubbed in oil. The hides are sent to the Calcutta market by the pykars (dealers or

* Ipomœa Grandiflora.

DIAMOND HARBOUR. rather brokers), who make advances to the moochees for a stipulated number of hides within a certain time. The horns and hoofs are not used. In the year 1857 cattle murrain (*bussunto*) prevailed amongst cattle in this part of the country, and proved destructive to a good many cattle; but it was not so severe as the last one. *Bussunto* is not a new disease, and it comes on after an interval of four, five, and six years, but does not cause much loss of cattle. There is another disease called *puschima* which attacks cattle rarely, but it is not contagious. In this disease the eyes, mouth, and nose water. There is no hoven, and the cattle never leave off food. It is not very fatal. There is also another disease called *aishoo*, it is not fatal also; and when the feet and mouth get sore, we wash them with alum water. Recently, the price of cattle has been steadily on the increase, because they are becoming few, the number being reduced from disease, and from slaughter by the butchers. The animal that fetched Rs. 16 ten years ago, costs now Rs. 23, if not more.

Rinderpest in 1857.

History.

Puschima.

Foot and mouth disease.

Price of cattle risen.

There is little pasture land in this part of the country, and this is owing to the zemindars letting all their lands to ryots for cultivation on high rents; consequently, poor tenants cannot afford to keep any portion of it fallow. Our supply of cattle is chiefly from the Oolooberiah haut, and the dealers now and then bring some to the village for sale. We keep no sheep, but I have seen goats and buffaloes get *bussunto*. In Mud Point there are some buffaloes belonging to some European, and they were ill during the last outbreak. I am not aware of any case in which a family has been ruined from total loss of cattle. This would have been the case, but the neighbouring people assisted such of them as could not afford to buy cattle. The recoveries in the last outbreak were from 15 to 25 per cent.; more than 60 per cent. of the cattle kept up in the affected place were ill.

Pasture.

Supply of cattle.

Goats and buffaloes.

Statistics.

F. H. Dobson, Esq. *Information furnished by* F. H. DOBSON, Esq., *Depy. Supdt. of Alipore Jail,— Calcutta 6th December* 1870.

I have resided at Alipore for upwards of 11 years. The soil in the vicinity of Alipore is sandy, and the cattle are of the Bengal and Hurreeand breeds, with a very small proportion of Australian and English stock.

Locality. Different breeds of cattle.

The average prices I pay for cattle may be stated as follows :—

About Rs. 25 to Rs. 50 for Bengal milk cows: about Rs. 75 to Rs. 100 for up-country milk cows: about Rs. 200 for English and Australian. The prices of country cattle have not varied during the last 10 years.

Average value.

Cattle in the neighbourhood are used for milk and draught purposes, ploughing bullocks only being employed for agricultural purposes; no cattle are used in this neighbourhood for burden.

Uses.

My cattle are housed in long thatched sheds.

Housing.

I always stall-feed my cattle with rice straw and oil-cake, and plantain trees passed through a chaff cutter. Valuable cows get gram besides, but the cows which get no gram are in as good condition as the others. As a rule, the people in the neighbourhood put out their cattle to graze during the day and give them one meal in their sheds at night. My cattle are watered from a tank. They are never herded or driven for pasture to other places.

Mode of feeding and watering.

The cattle of neighbouring villages are very poor generally, but mine are in a very good condition, which I attribute to stall-feeding and the addition of plantain trees.

General condition.

My stock is kept up by breeding, and I always keep special bulls. I have now a thorough bred Australian bull. The up-country, English, and Australian cattle are the only ones I import.

Replenishment of stock.

Cattle are bought and sold chiefly at hâts, such as Oolooberia, Kidderpore, and Chitla. The up-country cattle are bought at Chitpore, where they are brought every cold season: cattle are not exported from this part of the country.

Hâts, markets, &c.

ALIPORE.

F. H. Dobson, Esq.

The mortality among cattle is ordinarily very small, but the loss from plagues is very heavy. The first outbreak I recollect was that which occurred immediately after the Agricultural Exhibition at Belvidere in January 1864. The plague at that time broke out in the Exhibition, and it was probably brought there. I lost on that occasion nearly 30 head of cattle. The next outbreak which I recollect was about four months ago, but I only lost 2 on this latter occasion, and both within 24 hours of being first attacked. Cattle murrains prevail generally, I believe, in the cold season and the rains. The first outbreak of murrain I recollect lasted over six weeks. On the first occasion above referred to, four-fifths out of my whole herd were attacked, and about one-fourth of those attacked recovered, three-fourths of them died. The symptoms I observed were,—animal restless, total loss of appetite, skin hot, hair slightly on end, no eruption or shivering, swelling of tongue and throat not noticed; breathing slightly laboured, apparently from exhaustion; violent watery purging, but no blood or mucus was observed; milk totally gone, but in the case of those that recovered the secretion of milk returned after the lapse of three weeks.

Mortality among cattle.

Symptoms of *bussunto*.

Contagiousness.

I am of opinion that the murrain *bussunto* is decidedly contagious.

Treatment of *bussunto*.

At first I allowed the natives to adopt their own remedies, but finding that I lost every case, I gave half a pint of turpentine to a quart of linseed oil with a pound of oatmeal; all well mixed together and warmed. In most cases this was administered only once, and in some cases twice. The second dose was given about 30 hours after the first.

Sanitary measures.

The diseased cattle were removed to a distance of 35 or 40 yards from the others, and the sheds were fumigated with "dhuna" and sprinkled with lime.

Burial of carcasses.

The carcasses of animals dying from disease were invariably buried, and hides, horns, and hoofs were all buried with the carcass. There is no disease at present among my cattle.

W. Pritchard, Esq.

Information furnished by LIEUTENANT W. PRITCHARD, R. A., *Depy. Commissary-General, Calcutta.*

Locality and number of cattle.

I live at No. 16, Alipore, and had about 16 head of cattle in 1865. This year (1870,) I have 22.

Different breeds.

Three of my cattle were English, 3 Australian, and 14 Bengalee and Hansi. This year I have 3 English cows, 3 Australian, rest Bengalee and half breeds.

Uses.

I keep my cattle for milking purposes.

Mode of housing.

These are housed at night in a shed with brick walls and thatched roof.

Mode of feeding.

Water whence obtained.

I feed my cattle with crushed barley, Indian corn, *mutti kalye*, paddy straw, *doob* grass, and also Australian hay. My cattle are watered from a tank on the premises. My cattle are generally in good condition.

Stock how kept up.

Average price paid.

I purchase my native cattle at auctions in Calcutta, and obtain others from the Dum-Dum market.

Bengalee cattle cost on the average Rs. 40 to Rs. 50, Australian Rs. 250, English Rs. 300.

Mortality.

In 1864 I lost 8 out of 16 head of cattle from the Calcutta epizootic. In August last I lost 8 out of 22 from "inward pox."

Source of the outbreak.

In 1864 I purchased a bull at the Alipore Exhibition, apparently quite healthy; 2 others were first attacked and died, and the bull was the third to be attacked and die. These 3 died in one day and two died afterwards; two cows were attacked, but recovered after being treated with medicine.

Season in which plague prevailed.

Murrain prevailed at Alipore in the month of January 1865.

Symptoms.

The symptoms of the cattle murrain of 1865 were as follows:—A white viscid discharge from eyes, nose, and mouth; mouth sore; purging; mouth and stools very offensive; dull eye; shivering; appetite and rumination gone; hair on end; eruption not noticed; one had swelling of the back of

W. Pritchard, Esq.

tongue. In the outbreak of 1870 the symptoms were:—hanging head, dulness, shivering, ears cold, lying down; no appetite, no thirst, die in about one or two hours, no sore mouth, no purging, long breathing, weak cough, blood with purging not noticed, secretion of milk stopped. The murrain which broke out in January 1865 was infectious, while that which attacked my cattle in August 1870 did not appear to be so. I moved the remainder to Barrackpore, and then no more cattle were attacked, and they were grazing with other cattle near Barrackpore, but not one of the others were attacked In 1865 I gave to two of my cattle (the two which lived) half a pint of turpentine mixed with a quart of linseed oil (and I gave this to all the rest not attacked) twice in 13 hours, and in about 9 or 10 hours afterwards I gave one dose of linseed oil without the turpentine.

Contagiousness.

I buried all my cattle that died; indeed I make a rule of burying all animals which die in my possession. I did not separate my sick and healthy cattle. I am not aware that other animals are attacked with cattle murrain.

Sanitary measures.

I deem it right to bring to the notice of the Commission the fact that, during the last few days, I have seen large droves of Bengal cattle standing in flocks on the *maidan* of Calcutta; these were not the usual cattle seen on the plain, but the large excessive number was due to cattle dealers having brought them probably from up-country. It struck me that these cattle might be bringing disease with them, and there ought to be some law to prevent cattle entering Calcutta or other large towns without being first inspected, and their owners obtaining a certificate of their being free from contagious disease.

Kombar Alli.

Information furnished by KOMBAR ALLI, *Meat Agent, Fort William, dated 8th December* 1870.

I have been Government Meat Agent of Fort William and Dum-Dum for the last eight years. I purchase on the average from 300 to 400 head of cattle each month. They are chiefly cows, in the proportion of three cows to one bullock. The bullocks are required for work, hence I don't get many of them, and only those which are too fat and lazy are brought for sale. Bullocks cost on the average Rs. 16, 17, 18, and cows Rs. 12, 13, 14. I purchase them at the fairs of Dum-Dum, Oolooberia, Baraset, Bakhra, Gowripore, Ranaghat, Jessore, and Kidderpore. My servants purchase cows even at greater distances from Calcutta. I am in the habit of seeing sick cattle at the fairs, some affected with *gootee*, some with *simla* and *khoorah*.

Symptoms of *gootee*.

The symptoms of *gootee* are:—

1. Loss of appetite.
2. Cold ears and cold body.
3. Coat staring.
4. Purging, with blood, and very offensive.
5. Inside the cheeks and on the sides of the tongue sores, and very offensive.
6. Watery discharge from mouth and eyes; sometimes that from the mouth is red.
7. When sick animals get eruptions, they sometimes recover and sometimes die; about 20 to 25 per cent. of animals attacked show eruptions.

Contagiousness.

The disease is very contagious.

Diseased cattle exposed for sale.

When animals are sick with *gootee* they are sold in the fairs at a cheaper rate for native use. I never purchase sick animals. The owners of hâts, even if they know cattle are diseased, do not object to their being brought to the hât, as they receive from three to nine pies for each animal sold. A new comer to the fair would be charged 3 annas to 4 annas. Both buyer and seller have to pay toll. The farmer of the Kidderpore cattle fair pays Rs. 275 a month for his lease. The Oolooberia farmer pays, I believe, Rs. 300 to Rs. 400 per month. The Dum-Dum farmer pays Rs. 125 a month. When *gootee* is prevalent, some 20 to 30 cattle affected with this disease are often sold to the native butchers; some diseased cattle die in the fair.

Puschima symptoms.

The symptoms of the disease *simla*, also known as *puschima*, are as follows:—The belly is very much swollen, and the swelling increases as the animal gets worse. The animal stands quite stiffly, not able to move. His nose is poked straight out and his jaw appears closed. There is dribbling of water from eyes and mouth. An animal attacked with *puschima* seldom recovers.

Khoorah.

The symptoms of *khoorah* are, first, discharge and soreness of mouth, afterwards the feet become affected.

The mortality is very small indeed. Cattle affected with *gootee* sell cheap at the fairs, being bought for Rs. 2, 3, or 4. Ten years ago cattle were very cheap; five years ago they rose very considerably in price, and now they have got rather cheaper again. The reason for their being cheaper again is :— Kombar Alli. Price.

1. That troops are landed at Bombay instead of at Calcutta as formerly.

2. Not so many ships come to Calcutta as formerly, and consequently there are fewer sailors. In fact the demand for meat is not so great as it used to be.

(*N. B.*—The evidence of this witness appears to be most trustworthy).

Information furnished by W. C. HANNAH, Esq., *Hide Broker, Calcutta, 5th December* 1870. W. C. Hannah, Esq.

The trade in hides in the Bengal Presidency has increased very much of late, *i. e.*, during the last two or three years. The export from Calcutta for the last three years has been about 4 lakhs per month. Previous to this, an export of 2½ to 3 lakhs was considered a good average. The reason for this increase is the increased demand for hides in Continental Europe. About two-thirds of the whole export is to London direct, but in many cases the cargoes of hides are transhipped to Bremen and Hamburg. The remaining one-third goes to America. The trade has been encouraged by the opening of new lines of steamers *viâ* the Suez Canal, and freights have been considerably reduced even by the Peninsular and Oriental line of steamers. Hide trade.

In the hide trade several descriptions of hides are known, *viz.*, *A. slaughtered hides*, which may be sub-divided as follows :— Varieties of hides.

							Prices.
1.	Calcutta	Slaughtered	...	...	Rs. 57	per score or corge	
2.	Dacca	„	...	...	„ 48	„ „	
3.	Burdwan	„	...	...	„ 51	„ „	
4.	Patna	„	...	...	„ 48	„ „	
5.	Durbhunga	„	...	...	„ 55	„ „	
6.	North-West	„	...	...	„ 53	„ „	
7.	Cuttack	„	...	...	„ 47	„ „	

N. B.—The price depends upon weight.

Slaughtered hides are those of animals in good condition and *well grown*, but not necessarily of animals which have been slaughtered.

B. The dead green or "*murdari.*"—These hides are thin, marked, or branded, (*daghies*) or "rubbed," and not well grown, being generally taken from animals in bad condition. In this class animals dying from *gootee* would be included, but very few such are ever brought down country. The skins of animals dying from *gootee* are easily detected by careful inspection in the case of light-cured hides on the flesh side, in the heavy-cured hides on the hair side. *Murdari* or dead green hides may be sub-divided as follows :—

				Rs.	As.
1. Dacca	...	... (6½ lbs. each)	per score.	... 38	8
2. Burdwan	...	... (6½ lbs. „)	„	... 27	0
3. Patna	...	... (8 lbs. „)	„	... 33	8
4. Durbhunga	...	... (9 lbs. „)	„	... 41	0
5. North-West	...	... (7½ lbs. „)	„	... 32	0
6. Cuttack	...	... (6½ lbs. „)	„	... 27	0

C. The rejections are any not included in the above two classes, and vary exceedingly in weight and price.

The prices above enumerated are all for cow hides. The buffalo hides form a totally distinct branch of the trade and are chiefly shipped to America. The North-West buffalo hides being light-cured are not sent to America, but to the Continent, where they are highly prized. The trade in buffalo hides from the North-Western Provinces has sprung up during the last two or three years only. The prices are as follows :— Buffalo hides.

A. 1. Slaughtered buffalo hides, averaging 24lbs. each, Rs. 105 per corge, *i. e.*, score. Prices.

2. Light slaughtered, averaging 20 lbs., Rs. 95 per corge.

B. Dead green buffalo hides, averaging 18 lbs. about Rs. 85 per corge.

C. Dry buffalo hides, average weight 16 lbs. about Rs. 75 per corge.

I am of opinion that hides have decreased in quality of late years, although the export is now so much larger than formerly. We could not say by seeing a hide whether it belonged to an animal that had been poisoned or to one which had died of disease, but hides taken off by regular butchers can generally be distinguished from those which have been taken off by moochees, owing to the more careful way in which the former do the work. I and the other

CALCUTTA.
W. C. Hannah, Esq.

hide brokers do not advance money for the purchase of hides, but merely make purchases at the godowns (stores) of the local dealers or agents, such as Ameer Khan, Hasmadad Khan, Jeebun Bux, Ally Bux and Faiz Ullah, &c., who act simply as agents to the district *beparies*.

Advances.

These beparies make advances to the local moochees in each village, but, so far as I am aware, the agents in Calcutta do not make advances, though they discount bills. The local agents, such as Ameer Khan, sell the hides for the beparies, charging the fixed rate of 1 Rupee a corge, and are responsible to the bepari for the price which the hides realize. Never having travelled about in the districts, I am unable to say how the trade is carried on locally.

Curing.

Hides are cured with common salt, and Patna salt, "kala neemuk," is the best curing salt. Arsenic is never used, as far as I know, in the curing or preparation of hides, and indeed I believe it would injure the hides.

Cuttings.
Hoofs.
Horns.

Hide cuttings as well as hoofs of cattle are used for making glue, but there is no trade in hoofs, as the natives won't collect them. I myself have an order from home for one or two thousand tons per annum, but can't get any. Moreover, hoofs being of small value would not stand a higher freight than 15 shillings a ton. A very large business is done in buffalo horns, and this trade is increasing. Horns require no preparation, but require to be kept dry. The best buffalo horns come from Patna, Bhaugulpore, Soori, and Cuttack. The Meerut horns are inferior and the Cawnpore horns are of an intermediate quality. The prices of horns are 10 Rupees 4 annas per 100 pieces, weighing 3 maunds.

	...	9	„	12	„	„	100	„	„	2¼ „
Horn tips	...	8	„	8	„	½ maund.				

There is no trade in cows' horns, as people would not bring them in at the price which they would fetch in Calcutta, which would probably not exceed 1 Rupee 4 annas per maund. In the case of Meerut hides, the skins to the extent of 15 to 20 per cent. are injured with the *warbles*.

Burdwan hides have been very scarce this year in the Calcutta market, notwithstanding the cattle disease which has been prevailing there. This is an exception to the general rule, for when disease is raging in a district we look for an increase in the number of 'dead' hides from that district. I myself personally inspect every hide I purchase, as I cannot trust my subordinates to detect the various tricks of the trade. Scraps of hides from the size of one's two hands sell from 8 to 12 annas per score.

DISTRICT OF NUDDEA.

H. J. S. Cotton, Esq.

From H. J. S. COTTON, Esq., *Assistant Magistrate of Chooadangah, to the Magistrate of Nuddea,—(No.* 83, *dated Jibonnuggur,* 11*th February* 1870.)

As I rode to this place yesterday from Kurulgatchi, I made personal inquiries about the cattle disease, and find that it has broken out in a degree for which I was not at all prepared, by the information I had already received from the Police.

2. In Ramnuggur, Damoorhooda Thanah, more than 50 cows have died, and cows are dying every day. In Jeret in the same Thanah at least as many have died.

3. In Akondobaria, Thanah Jibonnugur, at least 100 have died; in Johwar Chundropore about 20; in Oottuli large numbers; in Madhabpore about 200; in Mohunnuggur about 100; in Sontoshpore about 25.

4. All these cows have died from *bussunto* disease, which appears to have exhibited the usual symptoms.

5. A full report will follow, as promised, but in the meantime I think it might be well to acquaint the Commissioner with the facts reported in this letter.

From H. J. S. COTTON, Esq., *Assistant Magistrate of Chooadangah, to the Magistrate of Nuddea,—No.* 102, *dated Chooadangah,* 22*nd February* 1870.

In continuation of my memorandum, dated the 10th instant, I have the honor to submit the following report upon the cattle disease in this Sub-division.

2. *Thanah Chooadangah.*—The Darogah of this Thanah has been culpably remiss in his inquiries. Though I knew from my own observation that both *bussunto* and *khoor* were abroad, he persisted in reporting that his beat was free from disease. Ultimately, he has furnished a certain amount of information. In the village of Dowlutdyar, both *bussunto* and *khoor* broke out about a month ago; 18 cows have died, three have recovered, and four are still unwell. There are upwards of 200 cows in this village. In Chooadangah itself eight or ten cows have died from *bussunto*, and eight are said to be still unwell. In Katly village more than 100 cows have died, and many are still suffering. There are at least 1,000 cows in

this village. In Hoguldanga *bussunto* broke out about the same time, and 12 cows are said to have died; in Kozlehali 10 or 11 have died; no less than 40 are said to have recovered in this village. Lastly, five are said to have died in Bheugsrulla of the same disease.

3. In all these villages the disease is reported to have broken out about the 20th or 25th of January, and to be highly infectious. In the opinion of the Darogah, death ensues within three or four days: so far, however, as I know, this is entirely incorrect, for few animals die within a fortnight. The Darogah records as symptoms, first, abstinence from food, then roughness of skin and erection of hair, and, lastly, the small-pox marks break out.

4. The above analysis is an abstract from the Police Reports, but, in my opinion, the mortality is understated.

5. *Thanah Damoorhuddah.*—I beg to subjoin an extract from a letter received from Mr. Glascott, of Lokenathpore, dated the 1st instant. This gentleman has been very willing to give me every information in his power. He says:—"The cattle sickness has not been bad this year in any of our villages, except Ramnuggur, where a great many cows have died, but none for the two last weeks. The pest is called *bussunto*, and shows itself by sores and maggots in the mouth, and I cure a good many cows by cleaning these sores and extracting the maggots, and then putting a little coal-tar on the place; also by putting ghee in the mouth, which softens the tongue and enables them to eat grass. They generally appear to die from exhaustion from not being able to eat. The other plague that we have at present, to a small extent, is *khoorah* or sore feet, which I treat in the same manner with coal-tar; if it is neglected the cattle won't move about to feed, and die in consequence. The great cattle disease here, and the one for which there seems no cure, is *puschima*; but I am glad to say that we have not had it this year in any of our villages. I believe it is brought on by eating rank grass after an inundation."

6. I ought to add that since the date of this letter *bussunto* has much increased among the villages of the Lokenathpore Concern.

7. The Darogah states that *puschima* has broken out in the village of Hurryrampore, where it is two months old, and in Kalabari, where it is one month old, and that 22 cows have died altogether in the two villages; but his description of the disease, as well as the fact that five cows are said to have been taken ill and recovered, make me doubt whether the disease was really *puschima* at all. He then describes symptoms,—a stupefied appearance, frequent evacuations, rheum in the eyes, and fever. He describes it also as being infectious.

8. Of *bussunto* disease five cows have died in Bastapore, two in Bhagdanga, 80 in Khadipore, from 50 to 100 in Ramnugger, 5 in Dadpullia, and about 50 in Jerat.

9. The disease broke out in most of these villages in December last, and still continues.

10. The Darogah with much confusion, describes the symptoms in this way. After passing through the same symptoms as I have described of *puschima*, the cow has shivering fits and passes blood with the fæces.

11. *Khoorah*, it appears, has broken out in the villages of Sultanpore, Capasdanga, Dinonathpore, Gobindohadda, and Uzeerpore, but no mortality is reported.

12. The sypmtoms are described as sores in the mouth and feet.

13. The people are said to be without remedy for *bussunto* and *puschima*; in *Khoorah* it is found beneficial to keep cows' feet in mud, or to apply pitch to the sores.

14. The average duration of attack before recovery or death is stated in all three diseases to be 15 days, and in *Khoorah* sometimes a month.

15. The Darogah of Damoorhuddah is also to blame for the unquestionably perfunctory manner in which he has carried out my instructions.

16. In *Jeebunnughur Thanah* the Darogah has done a little better.

17. *Puschima* is said to have broken out in Medinapore: but, strange to say, out of 25 cows attacked only 12 died, 13 have recovered. The date of the outbreak is recorded as the 27th of December.

18. The symptoms are as follows:—coat dry, no water trickles from the eyes or mouth, the body is alternately hot and cold; the breathing is laboured, the throat remains unswollen, shivering fits follow, and the animal passes watery stools and scanty bloody urine.

19. The average duration of attack before recovery or death is 10 or 12, or as many as 25 days.

20. The remedy resorted to appears to be a concoction of hemp seed, onions, and eggs.

CHOOADANGAH.
H. J. S. Cotton, Esq.

21. *Bussunto* has broken out in the village of Srirampore, where two cows have died; in Dhoba Khali, where 40 have died; in Utteli, where 150 have died; in Koya, where 5 cows which were attacked are still suffering; in Nischindpore, where 7 have died; in Taltola, where 10 have died; in Mondhopore, where 100 have died; in Sontoshpore, where 40 have died; in Madhubpore, where 20 have died; in Naryanpore, where 2 have died.

22. In these villages the disease mostly broke out towards the end of January, and it still exists; some cows having recovered, but more being still sick.

23. The disease is considered infectious; its symptoms are,—coat rough and changed in appearance, small-pox pustules come out on the body, the eyes water; as the disease breaks out the animal is said to be cold; as it gets better it gets hot; the cow breathes with difficulty, though the throat does not swell; it suffers from shivering fits and the hair stands erect; the urine is bloody, and the fæces watery and mingled with blood. The evacuations do not appear to be so offensive as in *puschima*.

24. The duration of attack is from 12 to 15 days.

25. The remedial measures are similar to those resorted to in *puschima*.

26. *Khoorah* exists only in the village of Soutoshpore. The coat becomes rough, ulcers appear on the feet, the mouth and eyes water, fever and shivering fits ensue.

27. The sore lasts from 14 to 18 days.

28. The remedies applied are similar to those resorted to at Damoorhooddah.

29. In *Kaloopole Thanah* the cattle disease has appeared but slightly.

30. *Bussunto* appears to have broken out in Belikhandi village; ten cows have died, and there were four still suffering.

31. The symptoms of the disease and the remedies for it are similar to those of Jeebunnuggur.

32. *Khoorah* infects the villages of Titadobe, Halimari, and Chandpore, but it seems without mortality, although no less than 125 cows are recorded as being diseased.

33. In *Allumdangah Thanah* the Darogah has made a careful inquiry.

34. *Bussunto* is rife: 5 cows have died at Nundobor, 10 at Bondipore, 43 at Kudasnughar, no less than 265 at Belgatchi, five at Khas Kotia, four at Buxipore, seven at Gurgorei Govindopore (the incredible number of 147 are recorded as having recovered in this village), three at Chilamari, seven at Gobindpore, and two at Nowda Vandobie.

35. At Kumri, Senaton, and Poltadanga the disease has just shown itself, and none have yet died.

36. In all the villages already mentioned the disease has broken out during the last three weeks.

37. The symptoms and remedies are the same as elsewhere.

38. *Khoorah* infects a large number of villages, *viz.*, Nimtolla, Bhalypore, Rungpore, Ramnuggur, Sulika, Dooli, Enayutpore, Nonda, Durgapore, Bondolil, Hasdi, Poltadunga, Patidgapore, Gangrie, and Gobindpore.

39. Fifteen cows are recorded as having died from *Khoorah* and 74 are still suffering; a total of 271 are said to have recovered.

40. The symptoms present the features already described.

41. It remains only for me to excuse myself for the delay which has occurred in the submission of this report. I cannot delay it further, or I would wait a few more days for the reports which have been promised me by several European gentlemen of the sub-division.

42. Perhaps if you forward the present report for the information of the Commission, it might be considered desirable in me to submit supplementary reports from time to time.

RANAGHAT.
Baboo Ram Sunker Sen.

From BABOO RAM SUNKER SEN, *Deputy Magistrate of Ranaghat, to the Magistrate of Nuddea,—No.* 173, *dated the 5th March* 1870.

On the 1st of January last I reported that the cattle disease known by the name of *puschima* had made its appearance in some of the villages of the Ranaghat Thanah.

RANAGHAT.
Baboo Ram Sunker Sen.

I am glad now to be able to state that since the date of that report the disease disappeared from the villages where it had shown itself without causing any further loss to the cattle owners.

In the Santipore Thannah out of 12,063 head of cattle, 235 appear to have died in the course of the present Bengalee year from various sickness known by the names of—

1.—*Tuti-fula*, produced by grazing on moistened grass in the month of Kartick (October).

2.—*Khor-rog* attended with swellings in the mouth and different parts of the body and an ague. The disease is considered as catching. It occurs in the month of Pous (January).

3.—*Puschima*, attended with discoloration, flatulence, and looseness. It occurs in Falgoon (February) and Cheyt (March), and is infectious.

4.—*Bussunto*, or cow-pox, prevailing in Falgoon and Cheyt (February and March).

None of these diseases are now prevailing to any great extent.

In the Chogda and Jagooly Thannahs no cattle disease has yet made its appearance.

Information given by three inhabitants of Dowlat Dyar, taken on the 5th March 1870. Dowlut Dyar.

We have got the cattle plague in our village. We call the disease *bussunto*. There are 40 houses in our village, and the number of cattle will be from 200 to 300. We should think Stock.
that ⅘ths of the cattle in the village have been attacked during the present outbreak, but only about 10 out of that number have died.* The disease showed itself at the commencement Mortality.
of Falgoon (February), but we cannot say whence it came, or whether the surrounding villages or our village had it first. (An old man, one of the witnesses, about 70 or 75 years old, says History.
that he remembers the disease having occurred when he was 12 years old; that outbreaks have not been of yearly occurrence, but they generally have one outbreak every 3rd, 4th or 5th year; though it is much worse in some occasions than on others,—for example, in the outbreak which took place 4 or 5 years ago, ⅘ths of the cattle in the village were attacked, and ¼th of those attacked on that occasion died. Another of the witnesses, a man of about 40 years of age, states, that when he was a boy his family had a herd of about 50 head of
cattle, all of which were attacked with the plague, and 9 or 10 of them died, of it, the re- Second attack.
maining 40 which recovered have never been attacked since, though there have been several outbreaks). This and other instances of a like nature lead us to conclude that an animal which has been once attacked, and which has survived, is not liable to catch the disease again; but we do not think that the value of an animal is enhanced from the fact of its having had and survived the disease; on the contrary, for some time it is worth much less, as it has lost condition, fighting with the disease. Though these frequent outbreaks may not diminish
the amount of cultivation in the village, taken as a whole, yet there are individual cases in Cultivation.
which a man has either to lessen the amount of his jote, or even in some cases leave it uncultivated altogether, his only means then of recovering his former position is by going to his *mahajun* and borrowing money at a high rate of interest with which to purchase new bullocks. There is a cattle market near here at Padah Billa, 6 miles from this, which is held twice a week. The rate of interest here is 6 annas a rupee in the year. We breed a certain Breeding.
amount of cattle in the village: about 40 or 60 a year, which is generally sufficient to carry on the cultivation of the village, though on certain occasions purchases are made, and on the other hand from time to time sales are made if the owners are hard up and are being
pressed by their *mahajuns*. These sales are for the most part made to beparies, who come Beparies.
from other villages in the district, and take the cattle away to sell them in Calcutta or elsewhere; large herds of from 200 to 300 being taken off at one time; only ten days ago such
a herd passed here on its way from Jenida to Calcutta. Some of the cattle in these herds Export.
are doubtless ill, though we have never heard of these herds bringing the disease into any
place. We consider the disease to be infectious, but we are of opinion that the infection is in Infection.
the air, and do not think that it is necessary that an animal should carry it. The disease *gootee* or *bussunto* generally comes on in Maugh or Falgoon (January or February). All the cattle that die in the village are skinned by sadoo moochee, no matter what they have died of; he pays a certain *jumma* to the zemindar—about 2 or 3 rupees a year, which gives him the right to the skins of all the cattle which die in certain
villages. The moochee does not pay the owner of cattle anything for the hides: he Hides.
sells the hides to Poran moochee, *mahajun* of Alookdia, and gets from annas 10 to Re. 1-4 for each hide, according to the state of the hide. The *mahajun* advances money to the moochee to get skins, but we do not know if any agreement is drawn up between them. The moochee is not bound to supply a certain number of hides within a certain time. There is no suspicion that any poisoning is going on here now; but 8 or 10 years Poisoning.
ago there was a moochee here, of the name of, Sital, who poisoned 3 head of cattle, and they

* Can only give the names of two men whose cattle had died, and whilst in the village this morning we heard that no cattle had died of the disease during the present outbreak.

DOWLUT DYAE. Diagnosis. all died: the man was had up for it and punished, and since that time we have had no poisoning; cannot say what sort of poison was used. It is easy enough to distinguish between a case of *bussunto* and poisoning, because in the former case there is no swelling of the stomach; but it would not be so easy to distinguish between a case of poisoning and *puschima*, because in both cases the belly swells. There is no trade in the horns of cattle here, though the horns of buffaloes are sold. Each person has his own cowherd; though the herds are often mixed up with one another, they are sent out to graze in the morning, and at night are fed with *bhoosee* and straw. I do not know that goats or sheep ever get *bussunto*, though goats get it, and I have also seen dogs have it, but not jackals. The cattle are watered at the tanks and rivers, and are never driven to other districts for grazing.

Horns.

Herding.

Goats, sheep, &c.

Symptoms. The symptoms of *bussunto* are—the animal first begins to shiver and gets into the sun to bask; it then gradually leaves off feeding; its mouth then gets sore, and its breath gets very offensive to the smell. Diarrhœa sets in, the stools being slimy, watery, and of a reddish color, this occurs on the 5th or 6th day of the disease,—and the animals die in from five to ten days; there is a sloughing from the mouth and discharge from the eyes: in some cases an eruption appears on or about the seventh day, at first in the form of spots, and then the skin peals off: the eruption is like that which the commission saw on a buffalo this morning. There is another disease called *khoorah*, which is an affection of the feet and mouth, but it is not very fatal; it occurs every year, or at any rate, every second year; it was here in January and February last. We apply tar, turpentine, and warm earth to the feet; we wash the mouth with hot water and with *hooka* water. There is another disease called *puschima*, and its symptoms are—the belly swells, dysentery sets in, the animal dies in from one to three days. Swelling of the skin appears all over the body, and when the hides are removed by moochees, these swellings are found to consist of congealed blood. This disease comes at all times of the year, at no fixed season, and shows itself even twice in the same year. There is no swelling of the throat, no sore mouth; there is a discharge from the eyes, and a very copious discharge from the mouth; the animal gets stupid before death.

Eruption.

Khoorah.

Puschima.

RAJ CHUNDER MOOCHEE, *of Alookdia, nearly 2 miles distant from Camp.*

Raj Chunder Moochee. Local hide trade. Has lived at Alookdia since his boyhood. Is an agriculturist and deals in hides. Has been dealing in hides for the last three years. Sells 50 to 60 hides to the *pikars* of Kishennuggur and Calcutta yearly. A hide sells from Re. 1-8 to Rs. 4, according to its size and quality. Does not receive anything in the shape of advance from the *mahajuns*. The *pikars* come to him periodically and take away the skins after making cash payment. Sells the hides to one Nemye Sircar and Cazee Tohurally of Kishennuggur; goes round and buys hides from Chooadangah, Koolpala, Boalia, and Horokandee, where the chumars, who have "*bhagaria*" jummahs, keep them for him and for other *pikars*. Also makes shoes for the people and sells the same. The hides are generally carted to the station and thence conveyed by the railway. Purchased only a limited number of hides this year. Pays from Re. 1-4 to Rs. 4 for each hide to the chumars. Has never signed an agreement for the supply of a stipulated number of hides.

Examination of MENDAI MOOCHEE, *of Belgachee village, about 1½ mile to the south of Chooadangah.*

Mendai Moochee. Local hide trade. I was not born at Belgachee, but I have resided there for the last 22 years. My brother, who died 20 days ago, used to get the hides of all the cattle that died in the village. He used not to pay the owners of the dead cattle anything for the hides, but he got them for the mere taking. He used not to carry on a trade in them, but used to make sandals for the villagers out of them, getting two or three annas a piece for them. I was not engaged in trade with him. Since my brother's death none of the cattle of the village have died, with the exception of one, and that was brought into Chooadangah to the commission for the purpose of a *post-mortem* examination.

Examination of BISHNATH MOOCHEE *of Taltollah.*

Bishnath Moochee. Local hide trade. Has lived at Taltollah since he was a boy. Carries on a trade in hides, and has the *jumma* of eight villages, for which he pays Mr. Sheriff a yearly rental of Rs. 35. Has let the Belgachee *jumma* to Mendai for Rs. 2 or Rs. 2-4; does not remember which. Has let the Chooadangah *jumma* to three other men for Rs. 18. He still keeps a share in it. Keeps two villages out of the eight for himself, from which, on the average, he gets 6 or 7 hides in the year. With the chief part of them he makes shoes for the ryots and sells only a few to the *pikars*, for which he gets from Re. 1 to Rs. 2 a piece. Pays Rs. 10 for the two villages—Taltollah and Hazrahattee, which he keeps for himself. Cannot explain how he makes this pay him. As a last resource, he says that in some years he gets as many as 40 hides from the villagers. During the present year has got 18 skins from the two villages. Pays his *jumma* in three *kists*

(instalments. Has paid two *kists* for the present year, *i. e.*, Rs. 20 for all the villages, out of which Rs. 8 are for the two villages in his own management. Cannot explain how he has paid such a large amount as Rs. 20, when Sadoo has paid Rs. 12 for Chooadangah, thus making out that Rs. 32 out of the Rs. 35, the annual jumma of the 8 villages, has been paid in two *kists*, thus leaving only 3 for the remaining *kist*. Sells his hides to Shrishtidur Moochee of Belgachee and Sooroo Churn and Ray Churn Moochee of Alookdiah; also to other *pikars* from Calcutta. Does not get any advance from them; does not know whether they get advances from the golahdars. Before Mr. Sheriff took the farm he paid the zemindar Rs. 5 for the two villages he now holds; he then had nothing to do with the other 6 villages. Is not able to say how many classes of hides there are. Does not ever remember hearing of any case of poisoning.

TALTOLLAH. Bishnath Moochee. Local hide trade.

Examination of SADOO MOOCHEE *of Chooadangah.*

Has lived in Chooadangah since his birth. He with three other men, Bishonath Moochi, Sindur Moochee, Tabee Moochee, have the right to all the skins of the cattle which die in the village of Chooadangah, for which they pay Mr. Sheriff, the farmer of the village, a yearly rent of Rs. 16. Before the village was in farm, *i. e.*, when it was under the *khas* (immediate) management of the owner, they used to pay him Rs. 4 a year, but then they were required on certain occasions to supply certain of the ryots with shoes. In the village there are four places where the bodies of dead animals are thrown. The people of the village generally tell us of the death of an animal. We do not give the ryots anything for the skins, but it is generally the custom for us to give those from whom we have got a skin or skins, a pair of shoes when he wants them, or we repair his baskets for nothing. With the skins we get we make shoes for the people of the village, and the surplus skins we sell to *pikars* who send them to Calcutta. Gooroo Churn Moochee and Rajh Chunder Moochee of Alookdiah are the *pikars* about here, and Budun Moochee of Belgachee. On an average we may get about 20 hides in the year. We get the most during the cold weather, at which time the old animals generally die. We do not make any difference between the skins of animals which die of disease or of old age, or any other cause. The price we get for the hides depends entirely on the state of the hide, and not on what the animal died of; that is to say, whether the hide is entire or not. There are four classes of hides, the prices of which vary according to the state they are in—1st quality is worth from Re. 1-8 to 1-12; 2nd quality is worth very nearly the same; 3rd is worth about 6 annas; and 4th are the hides of calves, which are worth about 4 annas. We do not get any advance from the *pikars*, and I do not know whether the *pikars* get any advance from the *goludars* or not. Cannot explain how they make it pay, when they have to pay Rs. 16 a year as *jumma* to the farmer, when on the average only 20 cattle of all sorts die in the year, and many of their skins are only worth from 6 annas to 4 annas a piece. Cannot say how they will make it pay; but the rent has only been raised this year. There are about 500 or 600 cattle in the village. We have no special name for the different classes of hides. We pay Rs. 16 in three *kists*, out of which, for the present year, we have paid two *kists*, in all Rs. 12. One of our partners, Bishonath, has in his own account the *jumma* of several other villages, for which he pays some Rs. 40 or Rs. 50. Three or four years ago some moochees in the village were punished for poisoning cattle, since which time there has been no poisoning going on. We have had more skins during the present year than we get on the average. Four years ago there was a similar disease among cattle as at present, and the deaths were great. We have not as much this year as we ought, as all the cattle that die now are being buried. I know Nundai Moochee; he lives in Belgachee, and is a labourer, and also has the *jumma* of the hides in that village; he took it from Bishonath, and I think pays Re. 1-8 or 1-12 for it.

Sadoo Moochee. Local hide trade. Varieties of hides. Advances. Poisoning.

Examination of GOOROO CHURN MOOCHEE, *of Alookdiah, Pikar.*

Has lived at Alookdiah for the last 10 or 15 years. Is an agriculturist and deals in hides. Does not himself skin the dead animals, but buys from those who do, and sells to Tobar Al-Kazi and Nemai Sirkar of Kishnaghur, and to Naniahdi of Kolootollah in Calcutta. Sometimes he takes the hides to them, and sometimes they send for them to him. He sometimes takes an advance from the *goludars*, but as a rule not: if he has taken an advance he has to pay Re. 1 a score for the hides; but if he has not taken an advance he has only to pay 8 annas. No document is drawn up between us. The sum advanced is repaid in hides. There is no stipulation that a certain number of hides should be provided within a certain time. Disposes of about 250 hides a year on the average, and gets Rs. 30, 15, 10, and 7 a score according to the quality of the hides. Goes round to the different villages to the moochees for the hides and pays ready money, but does not give advances. Pays from Re. 1-6 to 4 annas a piece for the hides. Has traded in hides for the last 7 years. In the year 1271 (1864) a great many cattle died after the cyclone. There is not much sickness within his jurisdiction during the current year, though

Gooroo Churn Moochee. Local hide trade. Advances.

ALOOKDIAH. Gooroo Churn Moochee. Advances.

some of the remaining *pikars* have got more skins than usual. They first wash the skin in water, then rub the inside of the skin with vitrified bricks, and then sprinkle from half a seer to one seer of black salt over each hide. The price of skins has not changed, owing to the late plague. When the skins come to them they are dry, and they cannot say whether the animal has died of disease or not.

N. B.—These five witnesses were evidently prevaricating largely.

CHOOADANGAH. Godie Joardar.

The evidence of GODIE JOARDAR, *a resident of Chooadangah, agriculturist and farmer, aged 67 years,—dated Chooadangah, 21st March* 1870.

Cultivation.

I have been born in the village of Chooadangah and have ever since resided here. I hold 40 beegahs of land, and I grow paddy, indigo, mustard, *kalye* (pulse) and chilly thereon. I have two ploughs and 4 pairs of plough bullocks, as also three cows. This number of bullocks is quite enough for the cultivation of my land. Short of this number will not suffice for cultivation. These bullocks cost me from Rs. 10 to Rs. 20 each, and they are employed on the fields at plough or harrow nearly every day in the year from morning to 11 in the forenoon, because my land yields different crops in different seasons of the year. A bullock in this district generally commences to work from the fourth year of its age, and goes on working till it is 22 years old. I commenced farming when I was 20 years old. I have four

Murrains.

farm laborers on my farm. I cannot say with any degree of certainty, but I must have lost some 60 or 70 head of cattle during the time I have been farming, from diseases known by the names of *puschima, gootee, khoorah* and *altara,* as also from old age. I also lost one bullock from eating the linseed flowers. Thirty years ago I had a herd of 30 head of cattle, out of which I lost 10 or 12 from *gootee.* Half of the herd were attacked, of which only four or five survived; they were all housed in one shed. All other cattle in the village suffered

Rinderpest in 1840.

from the disease in that year; less than half the number attacked having died in the village. We find as a rule that in every two or three years *gootee* breaks out among cattle. In some years 5 out of 20 head of cattle attacked die; in other years half the number attacked succumb, and in some outbreaks only 5 survive out of a herd of 20 head of cattle. The attack 30 years

History.

ago was very severe. But the recent outbreak has been mild. In the days of my grandfather and father, these diseases occurred as often as they occur in my days. I have often heard my father speak of the diseases. I do not know the cause of these diseases. *Gootee* generally

Season.

breaks out in the months of February and March, but it does sometimes break out in other months of the year. *Puschima* seldom attacks the cattle, but when it does appear, it does so irrespective of any particular season. *Khoorah* appears in the months of January, February, March, and April, and disappears with the setting in of the rains. *Altara* attacks the cattle in good condition, and they are suddenly attacked and die instantly. With reference

Second attack.

to *gootee,* I have also found that an animal once attacked with *gootee* never gets the disease a second time. The reason why I keep 11 head of cattle instead of 30 is simply on account of the increase of cultivation; *i. e.*, 30 years ago, in this village of Chooadangah; we had 10

Pasture land.

annas ($\frac{3}{8}$) of pasture land to 6 annas ($\frac{3}{8}$) of arable ground, and now there is not certainly more than 1 anna ($\frac{1}{16}$), if so much, of pasture to 15 annas ($\frac{15}{16}$) of arable. In those days when pasture land was abundant, other farmers in the village kept a larger number of cattle than now. We kept more cattle in those days, because there was grass in abundance for them: more in fact than was absolutely necessary for the cultivation of our lands. There are many more agri-

Rents.

culturists now than before. The rent of a beegah of paddy land. 30 years ago was only 6

Price of cattle.

annas per annum. It is now 12 annas. The bullock that cost Rs. 10 formerly now costs Rs. 15 or more. I do not know exactly the cause of increase in the price of cattle, but I attribute it in part to the smaller number of cattle in existence. Thirty years ago the Calcutta *pikars* used to take cattle from this district as is done now, and I do not know whether this practice has increased or decreased. The cattle in former days used to get straw and *bhoosee* at home during the night, and were allowed to graze during the day. Now they are

Breeding.

stall-fed during night, and in the mornings and evenings with rice straw, *bhoosee* (chaff) and *khulee* (oil-cake). They get very little to eat in the fields, consequently we are obliged to give them better food at home than before, when the pasture was abundant. Cattle are served by

Bulls.

Brahmini bulls, which roam about the country at will, and which generally are of a good breed and well conditioned. There are 2 or 3 bulls to 2 or 300 cattle of all sorts. There are generally a greater number of cows than bullocks in the village. Bull calves are castrated at the age of 1½ and 2 years by moochees, who remove the testicles by means of wooden knives. Young bulls seldom or never serve cows. The first calf is generally dropped when the cow is 3 years old. Cows generally have calves every second year. I consider the *gootee* to be

Infection.

infectious; but I do not think that *puschima* is so infectious as *gootee.* I do not know whether *khoorah* is infectious or not, but the villagers do not allow their animals to mix with cattle laboring under *khoorah.* The difference between *gootee* and *puschima* is that

Symptoms.

in an attack of the former there is running from eyes, nostrils, and mouth; fever sets in, and the animal purges blood and mucus, and dies in 10 or 15 days. In some cases there are eruptions on the body. In the case of the latter, the animal has hoven, its neck becomes stiff

and the rectum is congested. The attacked animal dies generally in 2 or 3 days. We are not in the habit of giving any medicines in cases of disease amongst cattle. We allow rice water, green grass, and *bhoosee* to the sick cattle, but as a rule cattle laboring under *gootee* or *puschima* refuse food. I have never seen either sheep or goats suffering from *gootee* or *puschima*, but they are liable to *khoorah*. I have not seen or even heard of a case of poisoning of cattle in my village. I am of opinion that if the practice of poisoning existed, the people would know it from the diseases I have described, from the symptoms. CHOOADANGAH. Treatment. Sheep, &c. Poisoning.

The evidence of ASSAN MUNDUL, *aged 50 years, agriculturist, a resident of Chooadangah.* Assan Mundul.

I was born in this village, and have ever since lived here. I have 20 beegahs of land and own 12 head of cattle, of which 4 are cows, 4 calves, and the rest bullocks. I have 2 ploughs; in some years I have had 20 head of cattle. I lost one calf from *gootee* this time; all my cattle had the disease in Falgoon (February) last, but they all recovered simultaneously. The 5 sheep I had, got the disease, but they recovered; the sheep looked stupid; were off feed, sloughed from the mouth, and had discharges from the eyes and nostrils. They purged blood and mucus; the sheep were ill 10 or 12 days. I have seen fowls being attacked with *gootee*, and I have seen sheep get the *khoorah* when the cattle were enjoying health. I never however saw sheep suffering from *gootee* when the cattle had not the disease. I have seen sheep escape when the cattle were affected with *khoorah*, and I have seen them get the attack along with cattle. I have not seen any goats being affected, and I never had any myself. I have not seen any case of poisoning, nor have I heard of any. Stock. Sheep. Goats

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The evidence of CHAND BISWAS, *aged 60 years, a resident of Chooadangah, agriculturist.* Chand Biswas.

I have been a resident of Chooadangah for the last 25 years. I hold in *jumma* 16 beegahs of land and own 2 bullocks and 2 cows. I have only one plough. I grow paddy, chilly, indigo, *kaley* and mustard, and work my plough bullocks in all months of the year. The cattle I have, have escaped during the recent murrain, and this is owing to the fact that nearly 7 years ago they had an attack of *gootee*. My experience tells me that cattle never get a second attack of small-pox; all my cattle are old, and they had never an attack of *puschima*. Some 8 years ago I had 15 head of cattle, but 4 of them died from *gootee*, and the rest died natural deaths. The reason why I keep a less number of cattle than before is, that there is no pasture in the neighbourhood and the cattle can have no grass in the fields; the pasture has got less, because the people cultivate a larger quantity of land than before. This they do for two reasons, first, that a greater variety of crops is taken off the land; secondly, that the land is not so productive as before. The reason of this is that the rains are not so abundant as they were, and that the circumstances of the people do not permit them to let their lands lie fallow. I consider the disease *gootee* to be infections, and in that belief we do not allow the cattle suffering from *gootee* to mix with those that have not got it. We do not separate the cattle of the village when the disease breaks out, simply because there is much trouble in doing this. My experience leads me to think that if 20 head of cattle are attacked, some 6 will die and the rest survive, and about 25 per cent. of the whole flock are generally attacked. In our place or in its vicinity there is no place where we can keep our cattle, even if we were inclined to remove them during murrains. I have not got any sheep or goats, and I do not know whether they get the disease or not. In our village the cows are more in number than bullocks. The former comprise a nine anna ($\frac{9}{16}$) portion of the cattle, and the latter a seven anna ($\frac{7}{16}$) portion. We do not sell cattle as a rule, but when pressed hard by the *mahajuns*, we sell one or two. The cattle in our part of the country get *gootee*, *puschima*, *khoorah*, and *alchara*. *Puschima* and *gootee* are different diseases. *Puschima* is, in my opinion, equally infectious as *gootee*. The symptoms of *puschima* are hoven and congested rectum, and the attacked animal lies down and dies out from the 1st to the 3rd day: when it recovers, it purges; a few pass blood, the hoven is reduced, and the appetite returns. The diseases I have mentioned have existed from time immemorial, and are not more destructive now than they were in our forefathers' time. There is no tradition amongst us regarding the origin of these diseases. I have never known of any land remaining uncultivated in consequence of the loss of cattle belonging to the owner; for when a man who holds a tenure loses his bullocks, he borrows money from the *mahajuns* and gets new animals, or that he lets it in *bhaug* (sublets) to others. We cultivate only paddy. The cultivation commences from the month of Pous (December) till Jyth (May). In the month of April, generally, the seeds are sown, and in the month of Bhadhur (August) we reap the harvest. We cart away the grain home. The chilly lands are tilled in Assar and Srabun (June and July), the seeds are sown in June, and the chillies are removed in December, January, and February. We commence turning indigo lands in Pous and Maugh (December and January), and the indigo plants are cut and received in July and August. The indigo plants are generally carted away. In Infection. Separation. Statistics. Sales. Diseases. Symptoms. History. Cultivation. Second attack. Pasture land.

11352

CHOOADANGAH. Cultivation.

Kartick (October) the land is prepared for mustard, and the harvest is reaped in November and December. We sow *kalye* (pulse) in the months of Bhadhur and Assin (August and September), and remove the same in Aughran and Pous (November and December). The land for linseed is prepared in October and the crop reaped in Falgoon (February). The cattle have hardly a holiday.

Modibooddeen Joardar.

The evidence of MODIBOODDEEN JOARDAR, *aged* 34 *years, a resident of Chooadangah, 22nd March* 1870.

Stock

I am Naib (factor) of Mr. William Sherriff, an indigo planter of this district, and I have been so employed since Maugh (January) of 1275 B. S. (1868). I was born in this village. I hold 40 beegahs of land, and my servants cultivate it. I keep 3 ploughs and 11 plough bullocks, as also 6 cows. Before this outbreak I had 25 head of cattle, but I lost 8 from *gootee* in the months of Aughran (November) and Pous (December) last. All my 25 cattle were attacked.

Gootee & khoorah.

After *gootee* had gone those that survived had the *khoorah*, but they did not die of the disease; they are all right now and in good working condition. I had 12 bullocks and 13 cows. I had always this number of cattle ever since I took the farm from my father. The number of 11 bullocks which I have is sufficient for the quantity of land held by me, but not for more land. Five years ago I lost two or three of my best cattle from *puschima*. There were other cases of *puschima* in other houses at the time. In some years *puschima* appears only in 2 or 3 houses in the village, but at other times it breaks out almost in every house. When a beast recovers from *puschima* it purges violently, and the hoven subsides. There is then running from the mouth, eyes, nostrils, and appetite returns. I am of opinion that a beast once survived from *gootee* does not get it a second time, but I do not know whether an animal recovering from *puschima* gets an attack of *gootee* or not. When a healthy animal in very good condition is attacked with *puschima*, it is sure to die, but weak animals generally survive. I have observed yellow mucus and blood in the stool of animals recovering from *puschima*. Both the dung and breath are very offensive. During or after recovery, no sores or eruptions are observed on the skin. I have known animals die of *puschima* in four or five hours, and in other cases they live for two days, when they succumb; but if they survive the third day, they generally recover.

Puschima. Symptoms.

Second attack.

Poisoning.

I have heard, but not seen, that chumars are in the habit of poisoning cattle for the sake of their hides. I do not know what they poison them with. Some cattle get poisoned by eating the castor-oil seeds. When any of the villagers want to buy cattle, they go either to the neighbouring villages or to the *Puddobilla Haut*. The present price of a good working bullock is from Rs. 20 to 25, and of a milch cow from Rs. 15 to 20. I estimate the number of houses at Chooadangah to be 200, and that of cattle to be 4 to 500. Of these a ten-anna portion ($\frac{5}{8}$) were attacked, of which number nearly 40 died from the effects of *gootee*. I have never heard of any cattle being imported from any distant place. We have only the ordinary Bengal breed of cattle here. The price of cattle has risen. A working bullock 20 years ago could be purchased for Rs. 10 and a cow for Rs. 12, and this rise is attributable to the supply being unequal to the demand and to the want of pasture. The cultivation has increased and a great many cattle are now-a-days bought by dealers and taken to Calcutta for being slaughtered. We have about 50 carts at Chooadangah, and they are used generally for agriculture; but in a few instances for the transport of goods in various directions. We keep no bullocks for pack work. About 200 of the 500 cattle at Chooadangah are cows. Our cattle are housed at night and let loose to feed during the day. We feed the cattle with straw, *bhoosee* and *kholie* once in the morning before they go out and once in the evening after they come home. They get a certain amount of water mixed up with their food, but they are watered in the neighbouring tank or river when being driven to the fields. The grasses in this district upon which the cattle feed are *Doob, Funtoora, Bircing, Banspata, Shama, Bhadhal, Manskate* and *Wooloo*. I have named them in the degree of value as food. The young grass that springs up after the first shower of rain generally produces relaxation of bowels, and the grass springing up after inundation causes swelling of the throats of those animals which are not in the habit of feeding on marshy grass. This swelling of the throat, as a rule, lasts for five to seven days, during which time a gurgling noise is heard in the breathing. There is a difficulty of swallowing, but there is no cough, and occasionally cattle die from this disease, which is called *golafoola*. Cattle live on an average 15 or 16 years. I find from my experience that about 10 per cent. of cattle die from ordinary causes. I consider both *gootee* and *puschima* to be infectious. The *khoorah* is also infectious. I do not however consider *golafoola* to be so, and no other disease that I know of, except the above three, is contagious. I have seen sheep suffer from *gootee* during the recent outbreak: four of my own sheep for my own use caught the disease *gootee* from being kept with the diseased cattle, and they slipped their lambs, but they recovered from the disease. When sheep are attacked with *bussunto* or *gootee*, they very often die. If they are attacked in a dry season, one-fourth or one-fifth of those attacked

Price.

Housing.

Feeding.

Grasses.

Swelled throat.

Infection.

Sheep.

will die. But if they are attacked during the rains and exposed to the inclemency of the weather, then nearly every one of the attacked will die. CHOOADANGAH.

Sheep and goats also get the *khoorah*, but they do not get *puschima*.

Sheep also get the disease *sturdy*.

[Witness here described the symptoms accurately.]

I have never seen or heard of any other animal being attacked by any disease.

Treatment.

I never attempted any medical treatment in cases of *bussunto*, except that I washed the mouth of the diseased animal with hot water. During the disease the animal eats nothing and we give no food, but when it begins to pick up a little, we give him boiled rice, butter-milk, ripe plantains, and soft green *doob* grass. I never heard of any medicine that would cure the three diseases I have mentioned.

I consider that the poison of *bussunto* can be carried by the air, and the disease spread by contagion.

Evidence of W. SHERRIFF, Esq., *Manager of the Sindooree Indigo Concern, Chooadangah,—23rd March* 1870. W. Sherriff, Esq.

I have been in this country 15 years, 13 of which I have spent at Joridah, which is partly in Jessore and partly in Nuddea. During the last two years I have had the management of the Sindooree Concern. Having heard the information given by the inhabitants of the village of Alukdia, regarding the diseases of cattle in these parts, read, I consider it correct and applicable to the parts of the country with which I have had personal experience. I think however that *puschima* is infectious, and I have found that when the disease appears among my cattle, segregation has always prevented the spread of it. Where a similar system is possible, I think it should always be practised. I don't see how segregation can be carried out in the majority of villages, on account of the difficulty of obtaining a piece of waste land adjoining, and a convenient separate watering-place. I am of opinion that separating all the healthy cattle of a village by driving them to a distance, leaving the sick behind, is utterly impracticable, and would entail upon cultivators a much greater loss than the death of their cattle. Not more than 25 per cent., at the very worst, of the whole stock die, and the average fluctuates between 5 and 10 per cent. Any system of stamping out by killing the animals first attacked I consider out of the question. The only practicable system of segregation is establishing a hospital on any bit of waste land which may happen to adjoin a village, and placing in it, under special attendants, sick cattle. When a great number of sick cattle exist in a village, I consider even this system one of great difficulty, or even impracticable. Such an arrangement would, in my opinion, be best carried out through the head men of villages, and not through the police, as the latter might not carry out the duty cautiously and properly, and might make it a means of oppression. Such pieces of waste land do exist, but they are not common. They are generally high tracts of land sparingly covered with mould, which has become exhausted, and is left fallow or used for the purpose of growing *ooloo* grass (thatching). They form a part of the ryot's *jumma*, and only a few are held *khas* by zemindars. I have seen a herd of 50 or 60 buffaloes attacked, and of these 15 or 16 die. This was a bad case. I think the disease is more marked in buffaloes than in cows. The expense of maintaining a quarantine establishment or hospital must be defrayed by a special cess, unless the surplus of the pound fund might be devoted to that purpose. There is little or no pasture land for cattle now-a-days, because the land has been taken up for agriculture. This I attribute to more natives having taken to agriculture in recent years. This is owing to the greater demand for oil-seeds and agricultural produce generally. It may also be in part caused by the land not being so well watered by inundations now as formerly, the ground being higher than it was, and the yield in consequence less. Each individual cultivator has fewer cattle now than before, and ryots have not the same appearance of comfort and wealth that they had. I have never known of lands lying fallow from cattle disease, but I have known this to occur after an unusually high inundation.

Segregation.

Mortality.

Hospitals.

Buffaloes.

Pasture.

With regard to *bhagaria jumma*, I am of opinion that if they were considered conducive to cattle poisoning, there would be no zemindar who would object to give them up, the revenue obtained in this way being very trifling; but I don't consider that this system prompts to the commission of cattle poisoning in the least degree. I have known cases of cattle poisoning, but it is not a general practice. Ryots can readily detect a case of poisoning, and are able to protect their own interests. In times of cattle disease, however, it would be as well to put a stop to the removal of hides from cattle in villages where the disease existed. I have always looked upon *puschima* and *bussunto* as different diseases: the former prevails principally in November, December, and January, and the latter in February and March.

Poisoning.

I have never known of their prevailing together in any place. I have not made or seen any *post-mortem* examination. I am aware of the practice of Brahminee bulls being carried

Bulls.

CHOOADANGAH. W. Sherriff, Esq,

off to Calcutta by the servants of the municipality, and on one occasion interfered to prevent the removal of four animals. I think it is a most objectionable practice, because these are the only bulls kept for breeding purposes.

A. Hills, Esq.

The evidence of ARCHIBALD HILLS, Esq., *an Indigo Planter at Nischindpoor,—Chooadangah, 23rd March* 1870.

I have been a resident of this district for the last 7 years, and have got about 200 head of cattle on the factory. During this time I have had opportunities of seeing the diseases known by the names of *bussunto, puschima,* and *khoorah.* When an animal gets an attack of *bussunto,* which may occur at any time of the year, he shows the following symptoms :—

Symptoms of *bussunto.*

1. The body is covered with spots on the skin, and on passing the hand over the body. it feels lumpy and feverish. The lumps are about the size of a pea.
2. It has generally running from the eyes, nose, and mouth ; there is a thick discharge, specially from the mouth and nostrils.
3. The bowels are generally very much relaxed, and there is sometimes purging blood.

I consider the disease to be infectious.

Symptoms of *puschima.*

The symptoms of *puschima* are :—

1. Swelling in the stomach.
2. Violent passing of blood.
3. Tongue swollen and mouth generally sore.
4. Mouth very much in the same state as in *bussunto.*

Infection

An animal attacked with *puschima* seldom recovers, the affected animal dies in from 2 or 3 hours to 2 or 3 days. I don't know whether it is as infectious as *gootee,* but I don't think it is. Out of 10 animals attacked, not more than two animals recover. It comes on generally at the beginning of the cold weather, but it is seen at other times too. The disease may possibly be contracted by eating the grass on ground which has been submerged.

Khoorah.

The symptoms of *khoorah* are,—sore feet, and in some cases sore tongue, but not always the latter. The disease generally is not fatal.

Sheep and goats.

I have had no experience as to whether sheep or goats contract these diseases, but I hear that both sheep and goats become affected with *gootee* and *puschima.*

Separation.

Generally speaking, I think the number of cows is greater than that of bullocks in villages inhabited by milkmen. In other villages the number is equal. It would be a very difficult matter to separate the sick cattle from the healthy in the villages about here. What I mean to say is that it will be very hard to induce the tenanty to agree to the carrying out of segregation. In the neighbourhood of a few villages there are some patches of waste land, where, putting other considerations aside, a hospital might be erected : thus treatment and segregation of cattle might be carried out. In some cases these waste lands would be the *khas* lands of the zemindar ; in others the lands are leased out to ryots. These are used as grazing grounds or for growing thatching grass. If the healthy cattle were to be removed to a great distance from the village, I do not think that the poorer portion of the ryots will be able to do so. The well-to-do ryots may, but not the tenants. I have never known of any instance of lands lying fallow in consequence of loss of cattle ; there would always be some means or other found out for the cultivation of the same. It is the custom in all zemindarees to let out in farm the right of removing hides. It is generally put up to the highest bidder, and may fluctuate in price. The amount thus realized is very trifling even in large zemindarees. I have listened to the evidence given this morning by the ryots of Alookdia, and I think it is good and true.

Cultivation.

Koolchara.

Information given by three Ryots of the village of Koolchara, about half a mile to the east of Chooadangah.

The witnesses have between them 48 head of cattle, out of which 32 are cows. Two of the men are *goallahs* by caste. This year there has been no disease among the cattle of the village, but last year they had *bussunto, puschima,* and *khoorah* ; one of the witnesses lost 3 out of his herd, another 4, and the other none ; cannot say how many cattle there are in the village, but should think about 150 ; can give no idea as to how many died in the village.

Rinderpest in 1869.

One of the witnesses had 20 head of cattle, out of which 12 were attacked with *bussunto;* and of them 4 died, the remaining 8 of the 12 afterwards all got *khoorah,* but the other 8 which were not attacked with *bussunto* also escaped the *khoorah;* none of the cattle died of *khoorah.* Four years ago they had an attack of *puschima* in their village, and one of the witnesses lost 2 head of cattle, the other two lost none. The symptoms of *puschima* are,—frothing from the mouth, off feed, swollen stomach, purging with blood, cannot swallow, the tongue swollen, offensive breath, dung very offensive, nose poked out, and the animal stiff and swollen about the neck; death in from one to two days. The symptoms of *bussunto* are,—shivering, fever, off feed, sometimes thirst, discharge from the nose, eyes, and mouth, sometimes thin and thick, purging blood and slime, and as offensive as in *puschima,* excoriations in mouth, and offensive breath, eruptions on the skin, they can sometimes be seen, on the ribs and on the dewlap. On recovery there is more or less casting off of the old skin.

CHOOADANGAH.

Puschima in 1861.

Symptoms.

[These witnesses, though of the *goallah* caste, were most uneducated, and could give but little information, so it was thought unnecessary to ask them any further questions.]

Evidence of ESSUR GHOSE, *of Chooadangah, 24th March* 1870.

Is a *goallah,* resident at Chooadangah, born at the place, age about 55, has generally 20 to 30 cows for milking purposes, gives price about 8 or 10 rupees for a cow, loses about 3 to 5 cows per annum, chiefly from *bussunto,* and some from *puschima;* his cows too are sometimes affected with *khoorah*; they don't die from that disease. If one gets *puschima* it always dies; 3 years ago *puschima* was very prevalent, and he lost 5 cows or more. When *bussunto* attacks his cows, generally more than half become attacked, and about 3 or 4 die; every year *bussunto* attacks his cows. Almost every other year *puschima* occurs amongst his cows, and 6 or 8 get attacked, and about half recover and half die.

Essur Ghose.

Cattle diseases.

The symptoms of *puschima* are,—difficulty in breathing, rattling in throat, fever, gets stupid, falls down; throat swollen; hoven; never purge at first, but if getting better then purge; breath very offensive, they are thirsty, but have a difficulty in swallowing.

Puschima. Symptoms.

Puschima is infectious. Cows attacked die generally in 6 or 8 hours, but if they recover they are pretty well, eat a little in 5 or 6 days. I give medicine made of coarse roots and barks which are infused in hot water, and I apply a hot iron to their throat.

Second attack.

Puschima may attack cattle a second time. *Bussunto* never attacks cattle a second time.

I have never kept sheep, so don't know whether they take *bussunto* or not. I own the best milch cows in the village.

This year two of my calves that were suckled by their mothers died from *bussunto,* but their mothers did not get attacked, because they had had *bussunto* four years ago.

Evidence of H. J. S. COTTON, ESQ., *Assistant Magistrate, in charge of the Sub-division,— Chooadangah, 25th March* 1870.

H. J. S. Cotton, Esq.

I have found from a careful census that to every 100 inhabitants of the sub-division, including men, women and children, there are 75 head of cattle. This would give to a total population of 200,000, 150,000 head of cattle. This calculation has been based upon a careful enumeration of about 50 villages, containing about 30,000 inhabitants, in which villages a careful census was made of all animals. I have also found that in this year, throughout this sub-division, there has been a mortality amongst cattle from disease of all kinds of 10 or 12,000, and I do not look upon the mortality this year as exceptionally severe, rather the reverse. It is difficult to say how many head of cattle have been attacked this year, and the disease is still going on. The existence of the cattle disease was for the first time brought to my notice in November last, and my experience leads me to believe that the disease followed no course, but that it broke out simultaneously in different parts. Reports reached me together from all parts of my sub-division. The length of my sub-division may be 35 miles and the breadth 30. I am quite certain that the disease has not proceeded from any one centre towards any one direction or directions. The majority of the inhabitants of this sub-division, say about 65 per cent., are Mussulmans; 99 per cent. of the cattle of this district belong either to them or to *goallahs,* who form about 5 or 6 per cent. of the population. From what I have heard, I think the three diseases *puschima, gootee,* and *khoorah* to be infectious. In about the end of January last, I issued an order for the burial of carcasses 3 feet deep in the earth, and I have reasons to believe that this order has been carried out. The moochees petitioned against the order, and the respectable natives objected on the score of not being able to get shoes. I have known of a case of cattle poisoning in the jurisdiction of this sub-division. As far as I have seen, I do not think that there is so much as $\frac{1}{16}$th of pasture land in the whole sub-division. The land is, in my opinion, over-cultivated. I hear that in the neighbouring district Pubna

Census.

Mortality.

Infection.

Pasture land.

CHOOADANGAH.
H. J. S. Cotton, Esq.

the pasturage is better, and the cattle looking better. I have never known of land lying fallow anywhere in consequence of loss of cattle and plague.

Segregation.

Question.—What measures would you suggest in regard to the segregation of cattle in the event of any future outbreaks?

Answer.—There is always a bit of fallow land near almost every village, where a hospital could be erected, but an establishment of this sort would demand the employment of a special staff, and I cannot conceive how that staff is to be constituted or paid. The pound fund might assist, as there is nearly Rs. 500 profit in this sub-division annually. A hospital formed for each village would be out of the question. The villages would not contribute a pice towards the establishment of a hospital, until they were perfectly satisfied as to the usefulness of the institution and recovery of their cattle.

Early notice.

Question.—How do you think the earliest intelligence of the outbreak of infectious disease in a village might be obtained by the civil authorities?

Answer.—Certainly not through the Police, as they are presently constituted. If an owner of cattle were bound under penal consequences to report the first outbreak of disease in his own homestead, the desired object might be obtained.

Hide trade.

Question.—Would you impose any restrictions upon the hide trade as at present conducted under any circumstances?

Answer.—No; not in these parts.

VILLAGE VISITS.

Dowlut Dyar.

Village Dowlut Dyar, 5th March 1870.

1. Bhagai Mundel's bullock; village Dowlut Dyar; condition good; dung in good order; breathes hard; mouth healthy; no discharges; does not feed well; no eruption; coughs; ill since 3rd March.
   Case.

2. Mungle Mundel's bullock; same village; 4 or 5 days ill; mouth quite healthy; did not eat for three days; said to be recovering. Urethra and prepuce inflamed; muzzle moist; no discharges; maggots in urethra.
   Case.

[*Not gootee—urethral disease.*]

3. Another bullock belonging to the same man appears to be ill; natives say it is not.
   Case.

4. A cow calf said to have been ill and now recovering; no eruption or loss of hair.
   Case.

5. Cow calf; 4 teeth; ill 10 or 12 days; now recovered; black specks all over the body; said to be eruptions (*bussunto*) by the natives. This animal was most carefully examined by Mr. Hallen and an intelligent Native, who evidently knows how to recognize the true eruption of *gootee*; the spots were all found to be scabs resulting from tick bites, and on removing the scabby spots, no true pit or congested area could be observed in the slightest degree.
   Case.
   Eruption.

6. A Bengali buffalo, male, alleged 20 days ill, recovering; had discharges from mucous orifices, had dysentery; over the back, sides, and hips scabby patches are seen single (small) and confluent (large); two very large ones on the ribs, and besides these a general desquamation of cuticle exists.
   Case.
   Eruption.

Some scabs are easily removed, others not so: on removing scabs some leave a well defined deep pit, others are shallow, and are evidently healing up from the bottom, except at the point where the scab remains attached; others on removal leave a large raw congested surface from which bloody mucous exudation oozes; the largest scab is over the last left rib, and measures 6 inches by 1½, and runs in the direction of the rib. On the shanks and inside of hind legs more crusts are seen, none in arm-pits or groins; desquamation and fissuring on ears.

There was an eruption in the clefts of all four feet and sores in the mouth; animal is lame still weak, but is feeding; natives say that he will be well in a month. They gave boiled rice while the animal was ill.

7. A cow, alleged 7 days ill; has patches and hard surfaces denuded of hair all over shoulders and sides; looks just as if the skin had been scalded. On right forefoot on the outside, above the fetlock, is found the remains of scab somewhat circular in form; no scabs or pits or raw surfaces elsewhere. Sores are said to have existed between all four feet. This animal had all the other symptoms of *gootee;* had a sore mouth; cow looks weak and in poor condition.
   Case.
   Eruption.

Chooadangah, 6th July, 1870.

CHOOADANGAH.

1. A fine looking, well conditioned bullock, alleged ill since yesterday; off feed; nose dry; slight thirst; nasal discharge; mouth all right; dung soft, contains a little blood; 5 P. M. eats a little; thirsty; congestion of gum; discharge from mouth, muzzle rather dry, ear and body hot, feverish, dung as usual.

Case.

To have Sulph. Magnesiæ ... ... oz. vi.
Spirit Œther Nitr ... ... oz. i.

Tengra Maree, 7th March 1870.

Tengra Maree.

No. 1, bullock full grown; good condition; 3 days ill; discharge from nose and small quantity from eyes; muzzle dry; coat staring; no eruption; 2 days off feed; thirsty; pulse 54; weak.

Case.

No. 2, bull calf; 6 months; condition fat; 5 days ill; discharge from eyes and nose (profuse); mucous membrane of gums much congested; purging; very weak.

Case.

No. 3, cow; 2 years old; 1 day ill; in good condition; shivered; off feed; muzzle dry; pulse 64; no fever; dung in good order, but a little slimy; mucous membrane of vagina a little congested.

Case.

No. 4, cow calf; 1 year; condition good; ill since yesterday; off feed; shivered; dung in good order; muzzle dry; discharge from nose; mucous membrane of gums and conjunctiva congested; feverish; pulse 90, wiry; vagina congested; is a little thirsty. The people distinguish *gootee* and *puschima*; latter more rapid; die in 3 days, former in 6 or 7 days; greater mortality in latter.

Case.

Gootee and *puschima.*

There are 3 or 4 kinds of *puschima*,—1, difficulty of breathing and swelling of throat; 2, dysentery; 3; swelling of hind quarter and rectum; 4, swelling of stomach. *Puschima* comes at all times, *gootee* at this season. This disease came from village Ameerpore; contagion goes from village to village and animal to animal: several cattle have died in this village (6 or 7); *gootee* came in the latter end of November. Old man (70 years) states that when he was a boy he remembers the disease. It was then looked upon as a usual occurrence; comes every 3 to 5 years. When he was a boy he heard his father speak of it as a common disease. Individuals are sometimes not able to cultivate in consequence of loss by cattle disease; instances one man, Nepal, who lost 4 and has only 1 left, but there is never general difficulty. When a man can't cultivate himself, he lets his land to others on the *bhag* system, or trenches. When cattle are wanted they take loans and purchase at hâts, or from neighbours; the carcasses are thrown on the field and the hides removed by Gopal Moochee, who pays a *jumma* to the zemindar. Can't separate sick, because animals accustomed to association would kick up a row if separated. Can't send away the healthy cattle of a village, because there is no waste or common land to send them to. Give no medicine, nor soft mashes. There are 25 houses in the village, and some eighty or ninety cows; give the same rate of interest to *mahajuns*, 2 pice in a rupee. Some attacks are more virulent than others; the severity of this disease is increasing as the weather is getting hotter; four died a month ago; one, 5 days ago; and one, 25 days ago.

Varieties of *puschima.*
Season.
Source of disease.
Infectiousness.
Date of outbreak.
History.
An old disease.
Effect on agriculture.
Individual hardship.
Disposal of carcasses.
Segregation.
Objection to.
Removal of healthy.
Objection to.
Treatment.
No. of houses and cattle.
Rate of interest.
Outbreaks differ in type.
Deaths.

Price of cattle now—cow and bullock, Rs. 15 or more; when he was a boy, Rs. 10. Price has increased in consequence of deaths and sales of cattle. They generally buy and sell among themselves, but sometimes a *bepari* comes and purchases. The moochees from Chooadangah and Belgatchee come now and then and buy cattle and take them to Pudobela hât, where they are bought by dealers for the Calcutta market; there are 2 or 3 cattle taken annually from each village. The hât takes place on Saturday and Wednesday. It is about 6 miles from Chooadangah. No poisoning is going on; it never happened in their village. Goats and sheep sometimes suffer from purging; they get ill in October and frequently die. No goats or sheep are ill now. They have never seen *gootee* (eruption) breaking out. Sometimes the skin peels off when cattle recover. No cholera or small-pox exist.

Price.
Increased.
Cause of increase.
Buying and selling *Beparis.*
Moochees.
Pudobela hât.
Cattle poisoning.
Goats and sheep suffer from purging in October.
Eruption.

TENGRA MAREE.

Case. No. 5. Saw a convalescent cow; no crusts; desquamation of cuticle, and loss of hair on back.

Case. No. 6. A large bullock, full grown, 8 days ill, got diarrhœa and the usual symptoms. In bad condition; being wild, could not examine it.

Case. No. 7. cow; 3 years old; 5 days ill; condition poor; muzzle dry; discharge from eyes, nose, and mouth; mouth in good order; conjunctiva congested; 3 days off feed; very thirsty; congestion of vagina; aphthous deposit; diarrhœa; passes bloody stools.

Case. No. 8. Bullock; 7 days ill; 5 days off feed; 5 or 7 years old; condition fair; running from eyes, nose, and mouth; muzzle dry; mouth cold; very weak; aphthous deposit inside and outside gums; lying down; very weak; breath offensive; dysentery; conjunctiva congested.

Grazing grounds. Housing. Number of hours worked. Cultivation. Cattle are driven out to graze along the *road* sides; no common pasture; they are housed a night. At the cultivating time the cattle are worked from 6 A. M to 12 noon. Before they are taken out they are fed on *bhoosee*, oil-cake, and straw soaked in water. Cultivating commences in Cheyt (March) and lasts till Assar (June); ploughing has now commenced.

Draught. Cattle are used in gharries to fetch straw, grain, &c.; they don't leave the village as a rule.

Belgatchee.

Belgatchee Village, 8th March.

Villagers report that the disease is dying out, and that no fresh cattle are getting ill.

Case. No. 1. A cow with calf at foot belonging to Dyal Mondul, about 10 years old, is said to have been 4 days ill, but is recovering, as it began to feed to-day. The present symptoms are,—congestion with excoriations of the lower gums, and buccal papillæ slightly congested. Fæces very slimy, and has been purging for four days; dry mouth; discharge from eyes and nose; in weak condition; coat rough, but probably animal is recovering. The calf is said not to be ill by the owner, and to be getting the little milk which the cow has to give. On examination the calf's gums are found to be highly congested, and there is one excoriation under the central nippers. The whole mucous membrane, especially the buccal papillæ, much congested. Calf 13 days old. The owner now states that the calf is purging.

Calf.

Cow's mucous membrane of vagina much congested.

Case. No. 2. Cow, 5 years old, belonging to Dyal Mondul; 5 days ill; in fair condition, with a calf at foot, 11 days old; latter left at home and reported to be all right. Symptoms are,—pulse 76, weak; discharge from eyes and nose; mucous membrane of gums very much congested, with excoriations; purging since yesterday. slimy stools, but no blood; mucous membrane of vagina very much congested with a slight excoriation on edge of labia; muzzle very dry; cow evidently very weak; conjunctivæ very much congested; off feed; great thirst.

Case. No. 3. A bullock belonging to Urjun Biswas, said to be 13 years old; condition fair; rather poor; said to be 3 days ill; purging; off feed; great thirst: pulse 64, weak; discharge from eyes and nose. Buccal papillæ congested and two or three excoriations on papillæ, coat staring, and the animal looks generally unhealthy and weak.

Case. No. 4. A bullock said to be 14 or 15 years old, belonging to Tariff Mehter, said to be 4 days ill; picked a little yesterday, but not eating to-day, though it has great thirst; pulse 76, weak; in fair condition; mucous membrane of mouth congested, and three well marked excoriations on lower lip; fever; discharge from prepuce; purging; slimy stools; no blood.

Case. No. 5. A bullock said to be 11 years old, belonging to Bikai Biswas, in good condition; said to have got over the disease. Nose nice and moist, but still a slight discharge from nostril; eye nice and bright; has been feeding since yesterday, and has no unnatural thirst; pulse 74. Has been 6 days ill, and three days purged, but has passed no bloody stools; mucous membrane of mouth still slightly congested.

Case. No. 6. A bullock said to be 7 years old, belonging to Punchoo Biswas, in rather poor condition; has been ill for 8 days; purged for 2 days, but since yesterday purging has ceased; feeds a little and is thirsty, but not to any great extent; pulse very weak, about 65; very viscid discharge from nose; muzzle dry and cracked; breath very offensive; aphthous deposit inside gums and a round nippers; buccal papillæ

congested; animal very weak; and the case is a very bad one. The nasal discharge very sticky and adhering to the nostrils; the animal can scarcely breathe. BELGATCHEE.

No. 7. A cow with calf at foot. Cow said te be 15 years old; the calf 11 days ill and said to have become a little stupid to-day; both the property of Punchoo Biswas; cow in poor condition; very weak; is down and unable to get up. Pulse weak and small, 80; fever; discharge from eyes and nose four days old; muzzle very dry; off feed and drink.

Case.

Mucous membrane of mouth congested, aphthous deposit on hard palate; patches of congestion on lower gum; udder and vagina very much flushed; udder very hot; milk suppressed; mucous membrane of vagina highly congested, and two large patches of aphtha; no eruption visible.

The disease is called *bussunto;* it is not a new disease, but has always been known by the present inhabitants to have occurred in the village 3 or 4 times; is said to come on every 5 or 6 years, and generally when there is a want of water and at this time of year. The present generation's fathers spoke of the disease. The symptoms of *gootee* or *bussunto,* or *nara* are,—ears drooping, feels cold, has fever, stands apart and looks dull and stupid, off feed, great thirst, and when it drinks much it commences to purge; at the latter end of the disease it has bloody stools. Has sore mouth and muzzle, but no sores in the feet. Those that begin to eat recover: although the disease is called *gootee,* no eruption can be seen on the body, but sometimes when the animal recovers the skin comes off in places; they have not seen marks of pox on animals as in men, but sometimes the hair comes off. An animal may die in from the third to the tenth day, but if an animal lives till the 12th day it generally recovers. The disease is infectious, but cannot say where it came from; think that it broke out first in this village.

Bussunto.
History.
Season.
Symptoms of *gootee.*
Infectious.

The last outbreak was 5 or 7 years ago, when, as far as they can see at present, it was worse than it has been on this occasion. It has as yet been 10 days in the village.

Previous outbreak.
Type varies.

The last outbreak began in October and lasted till December. This outbreak is mild at present, but may get as bad as the last. As yet 10 animals have been attacked, but none have died, 2 calves have died, but cannot say if it was of the disease; some say it was from want of milk. When an animal recovers it is weak and does not like the sun, not regaining its strength for nearly a year.

Date of outbreak and duration.
Deaths.
Convalescence tedious.

There is another disease called *puschima,* and it is worse than *bussunto,* as an animal attacked by it very seldom recovers, and it dies in from 1 to 10 days. The animal's belly swells, and it does not pass stools or water, it breathes hard and dies.

Symptoms of *puschima,* more rapid and fatal.
Varieties of *puschima.*

In other cases the animal shivers and falls down dead.

In another case the throat swells, the animal can't swallow, and dies.

There is another disease called *khoorah* in which sores came on in the mouth and feet, but this is seldom fatal.

Khoorah, symptoms.

Puschima may break out at any time in any year and in any month.

Season.

Puschima is not looked upon as so infectious as *gootee.* There are about 20 chumar families in the village; no one pays the zemindar for the right to take the hides, though Sisteedhur Chumar takes them. A case of poisoning has never been heard of in this village.

Infection.
Chumars.
Poisoning.

There is about 1 cow to 4 bullocks in the village; the cows do not give much milk, and are used as well as the bullocks in the ploughs. There are no buffaloes in the village, as water is scarce.

Proportion of cows to bullocks.
Cows used in ploughs.
No buffaloes.

In the attack of *bussunto,* 5 or 7 years ago, 120 or 125 were attacked, and out of them about 15 died; there were about 1,000 head of cattle at that time in the village. There are 40 houses in the village. The price of cattle is now double what it was 10 years ago; attribute this to the want of pasture, and the consequent less number of animals. Now there are only about 250 head of cattle in the village, but these are sufficient for the cultivation. No dealers come here, but they buy their cattle from the surrounding villages and from the market at Puddobila.

Statistics of former outbreaks.
Price of cattle doubled.
Reason.
Buying and selling.

BELGATCHEE.

Sheep contract *gootee*, goats and dogs do not.
Jackals.

There are sheep in the village and they get *gootee;* no pustules appear on them, but they have just the same symptoms as cattle. If 10 or 12 are attacked 1 or 2 would die; have not heard of goats or dogs getting the disease. No pigs in the village. Have not heard of jackals getting it.

Horses.
Treatment.
Number of hours worked.
Feeding.

Have not heard of horses getting it. Do not attempt to treat animals with the disease, as they know of no medicine, but they give them congee water and plantains. Cattle go to plough at 8 or 9 and come back at 11. There is no pasture land and the cattle are fed on bhoosee and straw.

Difference between *puschima* and *gootee*.
Infection.
Segregation.

In *puschima* there is no running from the nose and mouth, which there is in *bussunto*; but there is a swelling of the stomach, which there is not in *bussunto;* know that the disease is infectious, but cannot segregate, as they have not the means.

Taltollah, 9th March.

Taltollah.

Visited the village of Taltollah, in which there are about 80 or 90 houses and about 700 head of cattle; the villagers say that *bussunto* and *khoorah* existed in the village during the months of November, December and January; that nearly all the cattle in the village were attacked with one or other of the diseases, but that only two of them died, both of *bussunto*. Examined some of the convalescent animals, and found some crusts on the back, shoulders and dewlap of a calf; the natives say that these crusts show themselves more on the young animals, and account for this by their skins being more tender. Saw a cow said to have *khoorah* and which had recovered from *bussunto;* the rear hind foot had a sore in the cleft of the hoof, but this was more like rot; it had no sores in the mouth; saw another cow which had recovered from *bussunto* and which had an old sore in the rear forefoot, which was not *khoorah;* this animal has desquamation of the cuticle and loss of hair over the back, and black spots on the neck and dewlap, indicating where crusts had existed; had *bussunto* in January. The Factory Omlah produced a list showing that there are 64 houses in the village and 271 head of cattle; 12 died of *khoorah*, none of *bussunto*. Most of the cattle were attacked with *bussunto*. The disease came to this village from the village of Kadumpore. The greater number of cattle in the village are in wretched condition, recovering from the disease, and many of them exhibit desquamation and loss of hair over the back.

Number of houses and cattle.
Bussunto and *khoorah*.
Deaths.
Convalescent animals exhibit crusts.
Cases.
Statistics.
Source of disease.
Condition of convalescents.

Saw another convalescent animal. There is a well-marked pit on the points of the left hip firmly attached, leaving a bleeding surface when removed. There are crusts on the ribs of the left side; no crusts on the udder. The chowkeedar says that in no cases was there an eruption on the udder. The villagers say that the eruption appears on the face, both sides of the withers and shoulders all along the back; they also state that the mouth gets sore. Cow-houses large, well-raised, mud walls, and floors separate, stalls for animals separated by posts, and verandah or porch for the cow-keepers; cows put into house loose.

Case.
No eruption on udder.
Site of eruption.
Cow-houses.

Case.

Another cow and calf seen with loss of hair on neck and dewlap; cuticle chaffy and dry. Almost all the cattle of the village had the disease.

Symptoms of *khoorah*.

Symptoms of *Khoorah*,—mouth sore, also feet; did not eat for 12 or 15 days; had purging, but did not pass blood. Died of *inanition*. Had discharge from mouth, nose, and eyes in *khoorah*.

History of *bussunto*.
Second attack.
Repeated attacks of *khoorah*.

They state now that there is no purging in *khoorah*, but in *bussunto*. Old man, about 70, says that *bussunto* has always prevailed every two or three years, but when an animal has been once attacked it does not have it again. A cow can have *khoorah* more than once.

TALTOLLAH.

Puschima not infectious. No particular season. Condition as affecting liability. Varieties. Treatment. Second attack. *Puschima* and *gootee* don't prevail simultaneously. Calf infected by mother. Abortion. Variety of type. Mortality of former outbreak. Disease among men, goats, and sheep.

In *puschima* cattle die in one or two days; no cow escapes this disease. It is not infectious. There is no certain time of its prevalence. The best conditioned cow gets it first. There are 2 kinds,—1, animal stands aloof, drops and dies; 2, belly swells, off feed and drink, dies on 1st or 2nd day. No medicine known. There is purging; can't say whether an animal can have it twice, because few, if any, recover. *Puschima* and *gootee* don't prevail simultaneously, nor *khoorah* and *puschima*. *Puschima* prevailed about a year ago. A calf following its mother always gets *bussunto*. A cow in calf always miscarries. Five years ago *bussunto* was much more fatal than now. Some 50 head of cattle died in the village. Village healthy, no cholera nor small-pox. Goats and sheep don't get *bussunto*. Two brothers had 7 and 5 cattle, they were all ill and purged; no deaths.

Puddobela Hât, 9th March 1870.

Puddobela.

Examination of cattle present; minority healthy, majority either convalescent or sick. Convalescent cattle have crusts on skin. Number of cattle sold. Destination. Source. Price. Frequent appearances of *bussunto*. Season.

There were some 25 cattle present; these were carefully examined; some were found healthy (the minority), others were found to have had *bussunto* and partially recovered, one or two were found to be suffering from the disease acutely. One was passing slimy stools. Another—a calf—had an ulcer of the gums in process of healing. The recovering cattle had patches of bare skin and crusts on the back. Both *beparis* and villagers purchase in this hât. Some 200 or 300 cattle are sent down to the Dum-Dum market for Calcutta consumption. Some of the owners of cattle present had brought them from a distance of 10 or 12 miles. The price asked was from Rs. 6 to Rs. 12. The zemindar's Gomasta stated that the disease *bussunto* appeared every two or three years, always in the hot weather and end of the cold weather.

Puschima. Greater mortality from *bussunto*. *Khoorah*.

Puschima may appear at any time of the year; is a more fatal disease, but on account of the more general prevalence of *bussunto*, more cattle die of this disease. *Khoorah* appears at this season.

A very intelligent ryot, Shaik Sarung, gave the following evidence:—

Puschima and *gootee* contrasted. Varieties of *puschima*. Three forms of *puschima*.

Puschima is a different disease from *gootee;* there are several forms of it; sometimes the animal shivers, gets out of sorts, is off feed, and dies in a day or two without any other marked symptoms. Sometimes the belly swells and purging comes on; the stools may contain blood; such cases may recover; sometimes the throat swells and the gums get sore. No eruption appears on the skin and the hair does not separate. States that *puschima* may come at any time of the year: on being cross-examined he said that the disease more frequently appeared in the cold weather. It is not so infectious as *gootee*, and witness states that an attack of *puschima* is not protective against *bussunto*, nor *bussunto* against *khoorah*, nor *khoorah* against the return of the other two, but *bussunto* was distinctly stated by all present to be protective against itself. Witness' cattle had all *bussunto* last year, and he lost 10 cattle this year, his surviving cows had *khoorah*. This year *bussunto* did not appear in his village; there are very few cattle in this village, but these do not appear to have *bussunto* more frequently than other places.

Infectiousness; not protective against *bussunto*, nor *vice versa*, or against *khoorah*. *Bussunto* protective against itself. Cattle of Puddobela don't suffer more frequently than those of other places.

Spread of disease from market. No eruptions in *puschima*. Thirst.

The villagers state that disease may be conveyed from this hât to healthy places. States that in *puschima* there is never any desquamation or eruption under any circumstances.

Cattle are thirsty in *puschima*, also in *gootee*, more so in the latter.

Noonnuggur, 10th March 1870.

Noonnuggur.

Case.

No. 1, bullock, 9 days recovered from *khoorah;* the mouth first became sore round the roots of the teeth. It looked white, then the white peeled off and left an excoriated surface, then the foot became ulcerated, fluid issued from the cleft of the foot. The animal was 4 days off feed, no thirst, no purging, no discharge, mouth sound now. Has a sore foot, but can't say whether from injury or disease; this animal is said not to have had *bussunto*.

NOONNUGGUR.

No. 2, another case of *khoorah*, ill for 4 days, the only one belonging to the owner affected; has 10 or 12 more. Has had no sore mouth; eats; mouth carefully examined; buccal papillæ, floor of mouth, sides and under surface of tongue congested. Sores (ruptured vesicles) on each side of lips, and on tongue a very large well marked one; about the middle of the foot, on all four feet, sores in the cleft, the result of ruptured vesicles; crusts on the back of both ears; on the inside of tip of the left ear a vesicle ruptured in the struggle.

Case.

No. 3, another case of *khoorah;* has profuse discharge from nose and mouth, four days ill, mouth very hot.

Case.

Said by owner to have little or no discharge, blisters on lower lip and on tip of tongue, also a very large blister, 1 in. by 1½, about 2 inches from tip of tongue; floor of mouth, especially around opening of sublingual ducts, much inflamed, buccal papillæ much congested at base.

In good condition. In cleft of left forefoot a large blister.

Large blisters in cleft of all the feet.

No. 4, seven days ill with *khoorah*.

Case.

Slight discharge from mouth, and two or three vesicles healing; feet healing.

No. 5, case of *bussunto*, 10 days ill, recovering 3 days. Had purging, looked stupid, was weak, off feed, a few excoriations in the mouth; buccal papillæ still congested, sores on some of them (vesicles on five of them burst and healed), feet said not to have been sore; all right now, no eruption on skin, udder very healthy. Had purging for two days.

Case.

No. 6, case of *khoorah;* sore on upper lip, sores on buccal papillæ; large sores on side of tongue, burst vesicles. All four feet sore, as in other cases; no discharge, no purging, maggots in cleft of left hind leg.

Case.

Case.

No. 7, cow, poor condition, 12 days ill.

Buccal membrane slightly congested, tongue healthy, had slight purging, feet carefully washed and examined, found all right. Backer Mondle has 12 cattle, 5 of which were ill, 1 of *khoorah*, and 4 of *gootee;* disease came from Belea Kandee, near *Podobela Hât*.

Statistics.

Source of disease.

No. 8, a calf said not to have been ill, nor its mother; face, sides, back and thighs covered with crusts of different forms, most of them circular and circumscribed. There are also spots where the hair is coming off, mouth all right. Knows *puschima rog*. Animal very stupid, off feed, great purging, no blood. Stomach swells, neck swells, no discharge from nose, eyes, and mouth, no sores in mouth. Hair does not come off. *Puschima* and all diseases prevail most in the hot weather (this time of year). *Puschima* prevails at all times of year, perhaps less in the rains and cold weather. Another man said that *puschima* was worse in January, February, and March; that *gootee* prevailed at the same time. Both diseases may prevail in the same season, but not in the same place. One village may have *gootee* and another *puschima*.

Case.

Puschima.

Symptoms.

Season.

Puschima is considered to be infectious also: no animal died of *gootee* this year. Only 4 cases have as yet occurred. One man said that a heavy fall of rain would put a stop to all disease.

Infectiousness.

Katchakatta.

Katchakatta, 11th March 1870.

Ryot of village Duleepore, 10 miles north of Chooadangah; 70 houses; 350 cattle, have only *koorah*, about 60 head of cattle laid up. Have sores of the mouth and feet, sometimes one and sometimes another is first attacked. In some cases the mouth is not affected. They are off feed, have fever, and discharges occur from the eyes; breathing rapid, sticky discharge from the nostrils, no swelling of stomach or any other parts. Recover in from 7 to 15 days. Generally recover; few deaths; maggots sometimes form in the mouth and foot; such cases may die; no death has occurred in Pardoorgapoor nor Duleepore. Animals attacked by *bussunto* may have *khoorah*. *Khoorah* has prevailed for about 2 months, animals may have *khoorah* several times, but not in the same year. The only treatment employed is soft mud and coal-tar. *Khoorah* prevails at all times of year. They consider *khoorah* infectious. It runs through a homestead or village. *Khoorah* and *aishoo* are the same disease. *Khoorah* and *bussunto* may prevail at the same time in the same place. A cow may recover from *khoorah*, may have *bussunto*, and *vice versâ*. One old man stated that *nara, bussunto,* and *puschima* are the same disease, that is, a case which may from the strong fever appear to be *puschima*, turns out afterwards to be *bussunto*.

Khoorah.

Part affected.

Symptoms.

Bussunto not protective against *khoorah*.

Repeated attacks of *khoorah*.

Treatment.

Season.

Infectiousness.

Names.

Khoorah not protective against *bussunto*.

Bussunto and *puschima* the same disease.

Symptoms of *bussunto*,—1, animals look to be stupid and oppressed, and afterwards there is fever; 2, there is running from the eyes and sticky discharge from the nose, sloughing discharge from the mouth. Body gets hot, animal off feed, great thirst, runs to water; when the animal drinks, it purges, pieces of flesh pass with stool, slime and blood also; they boil *kulie* and plantains and treacle and buttermilk with boiled wheat and feed the beast with it; sometimes they recover, sometimes die. A greater number recover than die. When one cow in a homestead is attacked, they all get the disease; some have it more severely, some less severely; those attacked in previous years escape; they never see pustules, but during convalescence the hair comes off. Little dry bits of skin separate, leaving a raw surface; the mouth is full of excoriations. Buffaloes also get the disease (Mr. Scales states that 15 buffaloes of his got the disease and all recovered. Ryots of Mr. Hills state that buffaloes get it worse). Of 16 cattle, 2 or 5 or more may survive; sheep they can't speak about with certainty, but during the prevalence of *bussunto* sheep die with purging, discharge from mouth and nose, &c. *Bussunto* comes every 2 to 5 years, and different outbreaks differ in severity. An old man of 60 or 65 says that he saw *bussunto* in his boyhood and had heard of the disease from his father; they have never heard of its being a new disease. They attribute it to the air. It may be introduced by a sick cow purchased and brought into a village. The disease is infectious. *Bussunto* prevails in January and February.

Symptoms of *bussunto*.
Treatment.
Rate of mortality.
Infection.
No second attack.
Eruption.
Excoriations.
Buffaloes.
Rate of mortality.
Sheep.
History.
Type varies.
History.
Season.

Puschima.
Symptoms.

The symptoms of *puschima* are,—off feed, purge slime and blood, stomach swells, the mouth does not get sore, very fatal, die in 2 or 3 days. Shivering is the first symptom, purging comes on on the second day. There is fever, but not so severe as in *gootee*.

Season.

There are discharges from eyes, nose, and mouth. *Puschima* prevails at all seasons of year; does not prevail at the same time as *bussunto*.

Diseases, different.
Condition.

Experienced people recognise the difference between the diseases. Well conditioned (*taza*) animals get *puschima*.

When the skin is handled there is no shrinking. Die on the first, second, or third day; recover, if they do, after four or five days.

Recovery rapid.
Puschima and *gootee*.
Castor-oil and linseed.

Recovery from *puschima* is rapid. Have known of a case of *puschima* appearing in an outbreak of *bussunto*. Have not known of *bussunto* occurring during *puschima*. Do not know in what season *puschima* is worst. Cattle die after eating castor-oil and linseed; they die in a day or two; they cannot ruminate or swallow; have hoven and die; no purging.

Poisoning.
Hides carry infection.
Mortality.

Have never seen a case of poisoning. Have heard of it; they heard that moochees have poisoned cattle for the skin. Skins are not sold at hâts; they carry the infection of *bussunto*. Deaths may amount to one-fourth. The ryots from whom the above statements are obtained come from the villages:—

Basberia	...	...	...	13 miles	north of Chooadangah.
Pardoorgapore	...	...	...	9 „	„ „
Duleepore	...	...	...	10 „	„ „
Doorgapore	...	...	...	10 „	„ „
Chockbondabeal	...	...	...	10 „	„ „

and other neighbouring villages. All present agreed in the correctness of the above information, and had nothing more to add.

Dogs and goats.

Dogs and goats have *gootee*; horses may have it.

Information given by ryots living in and about Sindooree Factory.

This factory is about 10 miles from Chooadangah, to the west.

MEGAI MUNDOL of Mintzapore, SURROOP CHUNDER SHAHA of Sindoori, RAMJAN BISWAS of Kotalpore, KOODABOX BISWAS of Kotalpore, DALLOO BISWAS of Hingaparah, MULLUNG MUNDOL of Kootubpore, and others gave the following information.

No present disease.
Mortality.

All of them state that there is at present no plague among cattle in their villages of any description, though four years ago, *i. e.*, 1273-74 (1866-67), they had *bussunto*, of which $\frac{1}{16}$th of the cattle belonging to the different villages died.

SINDOOREE.

Symptoms.—The animals looked stupid, kept apart from the rest of the herd, ears drooped; on the 3rd or 4th day they refused food and had great thirst, after which they had liquid stools mixed with blood and mucus, excoriations on the gums and sores on the tongue, running from the eyes, nose, and mouth, and death generally occurred in seven days: if they did not die in that time, they generally began to recover, the first sign of which was a return of appetite. No eruption appeared on the body, but in some cases, after the animal had begun to recover, the skin came off in patches; whilst ill the animals did not ruminate. No medicines were administered, except warm water, with which the mouths were washed out; also bamboo leaves and green grass and ripe plantains were given to eat, the tongue was also rubbed with ghee. The disease is considered infectious, because if one of the herd gets the disease, the rest generally take it. Although they know that the disease is infectious, they do not generally separate the diseased animals, as they have no means for doing so; if there were means they would do so. Are not of opinion that cultivation, as a whole, has suffered from the visitations of the plague, though there may have been individual cases of hardship. The disease has been known in the country for any number of years, and makes its appearance at various intervals, from seven to eight years apart. The disease generally makes its appearance in October, or if not, then in February or March. The price of cattle has increased in the last 10 years, but not much, *i. e.*, cattle that 10 years ago would have cost Rs. 10, would now cost Rs. 13 or 14, but the price of everything else has increased in a like proportion. Purchases are generally made from the market at Puddobela, but private sales are also made. There are moochees about who rent from the zemindar the right to the skins of certain villages, and they sell the skins to the people, who are go-betweens between the moochees and the Calcutta dealers; they get from Re. 1 to Rs. 8 for each skin.

Symptoms of *bussunto*.

Treatment.

Infectiousness.

Segregation not practised.

Effects on agriculture.

History.

Season.

Price.

Markets.

Hide trade.

Have heard of cattle being poisoned, but have never seen any cases of it, nor have they lost any cattle by it. Besides *bussunto*, there are two other plagues, *khoorah* and *puschima:* the former is of common occurrence, but is never fatal; the latter is of rare occurrence, but when it does come, it kills every animal that it attacks; *khoorah* comes on in the month of Assar (June and July), and at this time, March. There is no special time for *puschima;* it comes at any time.

Poisoning.

Khoorah and *puschima*.

Puschima.

Season.

Have never heard of *puschima* and *bussunto* coming on at the same time. An animal that has once had *bussunto* and got over it, never gets it a second time.

Puschima and *bussunto* don't prevail together.

Second attack.

Khoorah symptoms.—Leave off food, fever sets in, get sores in the mouth, which cause a running from the mouth, and a sore comes in the cleft of the hoof; after two or three days they feed again, but are ill for seven or eight days. The animals attacked are either tied up in wet mud, or coal-tar is put to the hoof; they are generally not fit for work for 13 or 14 days after being attacked. *Khoorah* is not infectious.

Symptoms of *khoorah*.

Treatment.

Puschima symptoms.—In some cases the belly swells, the animals are off feed, look stupid, shiver, do not purge, but die on the second or third day; there is no running from the eyes, nose, or mouth, or purging, as in *bussunto*, except when the animal is beginning to recover, and then purging sets in, which is a sure sign that the animal is beginning to recover. Are of opinion that *puschima* is not infectious, though it is more deadly than *bussunto*. Of late the breed of cattle in this part of the country has greatly deteriorated, 1*st*, because the bulls have been taken away to make the roads; and, 2*nd*, because there are no pasture lands, all the country being under cultivation. Have never noticed that there was disease among men at the same time as among cattle.

Symptoms of *puschima*.

Not infectious.

Breed.
Deteriorated.

Causes.
Bulls removed.
No pasture land.

Hatikatta.

Village of Hatikatta, visited 22nd March 1870.

No disease now.

There are some 20 houses and 100 head of cattle. *Gootee* and *khoorah* prevailed here in January. After *gootee* had disappeared, *khoorah* came on. Some of the cattle which had had *gootee* were affected with *khoorah;* about half the cattle were affected, and none died. Had *gootee* about 10 years ago. Had *puschima* in 1266 (1859); about 12 were attacked, and 8 or 10 died.

Khoorah succeeded *gootee*.

Puschima.

Gootee came to Alukdia, an adjoining village to the west, first. It appeared there in the same month; two or three cattle died there. The disease proceeded to Taltollah, to the east, after appearing in this place. Some of the cattle which recovered in this place had crusts. They lost their hair however. The cattle are all well now, and have recovered their former condition; they lost condition during the attack. They gave the cattle soft grass and ripe plantains and butter-milk, no medicine. There are no buffaloes or goats in this village; the sheep were not ill during this attack of *gootee*, but in the previous attack sheep suffered; the hair came off during the convalescence. It is the general opinion among the villagers that sheep can get the disease; they have not seen goats and dogs have the disease. *Gootee* is infectious, and when an animal is once attacked it is not attacked again. The price of cattle is not enhanced by the simple fact of their having had the disease before. The price of cattle has risen in common with that of other articles, and there is more demand for cattle. *Puschima* is infectious, but not so much so as *gootee;* it attacks the well conditioned. One villager of Alukdia knows of a case where a cow had had *gootee* one year before, and subsequently died of *puschima*. This is the general feeling. If an animal survives *puschima* (a rare event), it does not have *puschima* a second time. It may have *gootee*. In *puschima* an animal gets stupid and falls down, gets hoven, shivers and dies. When the animal recovers, it purges violently, and sometimes passes blood; no ulcers of the mouth or swelling of neck. When an animal dies it is thrown into the open, and the moochees take the skin. There is a little pasture land in the neighbourhood, but no pasturing fields. The cultivation is now increasing at the expense of pasture land. The cultivated land having become less productive, pasture land was taken in. In this village linseed, mustard, pulses, and indigo are cultivated and sold; they leave land fallow every 5 years; they do not manure. On indigo lands they grow *kullai* (pulse) after the indigo is removed, and on rice land, mustard, teel, and linseed; these are taken in rotation; cattle are employed all the year round in one way or another. The Meherpoor road is close; cattle frequently pass along this road in herds of 100 or 150. When we wish to buy or sell we frequent the hâts of Pudobilla, Pudoa, Jam Jami, Budwa, or Budalia. There has been no cholera or small-pox in this village for 2 years. Small-pox prevails in Alukdiah; *gootee* prevailed first; they consider the diseases similar, but men are not affected from cattle, nor *vice versâ*. *Gootee* creeps from village to village, and does not appear at once in many villages. In a village many houses may be attacked at the same time. *Alchara* is a disease which occurs occasionally. The animal simply falls down and dies. We have known individuals suffer from loss of cattle and allow their lands to lie fallow, but never a whole village; they are afraid of this disease, as it carries away so many cattle. Cattle are herded and sent to pasture; some of the villagers cultivate land at a distance. The inundations are less severe now than formerly. There was an exceptionally severe inundation a few years ago, and after that subsided, cattle had *khoorah* and swelled neck, which, they say, comes on from eating submerged grass.

Gootee. Source.

Course of disease.

Eruption.

Treatment.

Sheep

Sheep liable to *gootee*.

Goats and dogs.

Gootee infectious.

Second attack.

Price.

Increased.

Condition.

Gootee not protective against *puschima*.

No second attack.

Gootee may occur after *puschima*.

Symptoms of *puschima*.

Disposal of carcass.

Pasture land.

Cultivation increasing.

Crops cultivated.

Rotation of crops.

Employment of cattle.

High roads.

Herds.

Markets.

Cholera and small-pox.

Mode of spread.

Alchara.

Effects on agriculture.

Cattle herded.

Inundations.

Examination of ryots belonging to Alukdiah village, about 3 miles to the west of Chooadangah, taken on the 23rd March.

Alukdiah.

There are from 150 to 200 houses in the village, and about 1,000 head of cattle, of which about half will be cows and half bullocks; we have *bussunto* raging in the village at this present time, and it has been going on for the last month, and up to the present time about 100 cattle have been attacked, and 8 or 10 of them have died. Can only give the names of two men who have lost any; the last died 12 days ago. The symptoms of the disease are that the animal looks stupid, shivers, is off feed, and water runs from the eyes, nose, and mouth, has watery stools, and if it passes blood, it generally dies; if it gets over 7 days of the illness it generally recovers; do not see any eruptions, but if you rub the skin you feel it rough; the hair does not come off, but sometimes little bits of the skin come off, about the size of a 4-anna bit; the skin is then of a

Proportion of cows and bullocks.

Statistics.

Symptoms of *bussunto*.

ALUKDIAH.

dark color, and does not look like a sore; there is no hollow, but there is a reddish rim round the place. We had a similar attack to the present one about 4 or 5 years ago; on that occasion the mortality was greater than at the present time, 2 or 3 died then out of each 20. *Puschima* is a worse disease than *bussunto;* we had it in the village last year, when from 20 to 25 head of cattle died; it was in January or February; the symptoms of the disease are,—the animal begins to shiver; is swollen, off feed, and generally dies on the first or second day; there is also purging, which is a fatal sign; it waters from the mouth, and shivers at the time of death; its neck is stiff, and its nose points out; if it is going to recover, the swelled appearance generally disappears; it begins to eat and does not shiver, and its bowels are rather relaxed; if the animal sneeze it is a favorable sign, so also the passing of water. In fatal cases the animal passes blood and slime; the breath of the animal is offensive; its jaws get locked and it has a short sort of cough; sometimes the throat swells and sometimes the hind quarter swells. *Bussunto* is a very infectious disease, and if it comes into the herd it goes right through it. *Puschima* is not infectious. We have not got any places to which we could send the sick cattle, and therefore we do not separate them. In *bussunto* the gums of the animals become sore, and we wash them with ghee and warm water.

Previous attack.
Type varies.
Puschima.
Symptoms.
Infectiousness.
Puschima not infectious.
Segregation not practised.
Reason.

There is another disease called *khoorah*, but it is not a fatal disease; the animals are off work from it from 15 to 30 days; we place the feet in mud and water for it. We take the bark of the wild jack tree, and pound it up and make an ointment of it. Some people put tar, but the doctor of the village does not approve of it; if maggots come, then they put tar; do not give any medicine in cases of *bussunto;* in *puschima* give tobacco leaves, turmeric, 21 chillies, and hooka water with the roots of 21 trees, datoorah, sajnah, peepul, (not the tree, but the root of ginger), chultah, madar, dab tree roots, toolsi and others (there must be 21 things, but they include the goor, turmeric, chillies, &c.) We put this mixture to the eyes, nose, and ears of the sick animal; we wet a cloth with the mixture and squeeze it into the nose, ears, and eyes; we do not put it into the mouth.

Khoorah.
Treatment.
Treatment of *bussunto.*

There is another disease called *badla* which comes in the rains; the animal gets lame. It comes from eating wet grass; the animals do not die from it. There are fewer cattle in the village now than there used to be: the cause is, that there is no grass for them to eat; the cause of this is that the rains are so much less and there are no inundations; the cultivated lands do not give more than half the crops they did; we have hardly any lands fallow. The cattle are now much more stall-fed than they used to be, because there is no grass for them: one man says that 15 or 16 years ago he lost all his cattle, 22 head, and could not cultivate his lands; half of them were taken up and cultivated by other people. Another man, 2 or 3 years ago, lost 8 head of cattle out of 11, and the same took place with regard to his lands. Have never seen that the lands of the whole village have suffered, for if one man loses his cattle his neighbours help him. No doubt the moochees give poison, but none of the villagers know what poison is given; they give it in plantain leaves, or they put it in the grass that the cattle are going to eat.

Badla.
Fewer cattle.
Cause.
Land less productive.
Feeding of cattle.
Case of individual who lost all his cattle.
Another case.
General effect on agriculture.
Poisoning.

Two or three years ago there was poisoning going on, and we warned the moochees; one man was caught at the village of Krumpoor, and was put into prison for 2 years. Do not think that there is any poisoning going on now. Can distinguish between poisoning and disease; in poisoning the animal froths at the mouth and its body swells. A month and a half ago one or two men had small-pox in the village, but not now; there has been no cholera. Sheep, goats, and fowls get *bussunto,* but not *puschima.* Dogs get *bussunto,* but we cannot say about jackals.

Case of poisoning.
Recognise symptoms of poisoning.
Small-pox.
Cholera.
Sheep, goats, and fowls.
Dogs.
Jackals.

The moochees claim the right to the skins and send them to Calcutta. *Pikars* come sometimes and buy cattle; the old and lame ones they take to Calcutta, as also some for milk. Herds of cattle pass here from the direction of Meherpoor. In the month of Kartick (October) last, some 400 or 500 good ones passed; do not know where they went, but do not think they

Disposal of carcass and hides.
Cattle trade.

ALUKDIAH.

went to Calcutta as they were good cattle. They came from the north of the district, where there is good grass. Put the cows to the Brahminee bulls, though they are being caught and taken to Calcutta; 6 were taken from this village in December last, and the men who took them had an English order; they were the carters of the Municipality, and took them to work in the carts. By their going some of us are glad, as our crops are not destroyed. We have 5 or 7 Brahminee bulls still left in the village. Cannot say how many young bulls, but they do not cover the cows.

Breeding.

Removal of Brahminee bulls.

Saw a case. A cow reported very sick, lying down, viscid discharge from nose, eyes, and mouth, especially nose; excoriations of gums, buccal papillæ, tongue much furred, 3 days sick, purging blood and mucus, membrane of vagina very much congested, labia swollen, off feed, great thirst, do not give any medicine.

Case.

Locknathpore,—visited 25th March 1870. Locknathpore.

KISTOLAL BOIRAGEE, Gomasta of factory Locknathpore. There are 148 cattle now connected with this factory; 14 buffaloes have died of murrain and 12 cows; all the cows, with probably a few exceptions, suffered from the disease.

Statistics.

Mortality.

Symptoms of *bussunto*. Gives the usual symptoms of *bussunto*, no eruption on skin; considers the disease infectious.

Infectious.

Has seen this disease before, but never lasting so long. There has been a particularly long drought this year; no rain since 10th October.

Drought.

History. Had it about 10 years ago: an animal once attacked does not get it again.

This is not a new disease. It has always been known in this part, but has never been so virulent before. In consequence of this, individuals will have to purchase cattle, or give out their land in *bhag jote*. In some way or other the land will be cultivated. He has never seen the cultivation stopped on account of loss of cattle from disease.

Effects on agriculture.

The ryots look upon the disease as a serious matter, but are not apprehensive of it, on account of their apathetic character; no medicine is given; no separation is adopted. Mr. Glascott separated his cattle, and attributes his small loss to that circumstance. Does not think that the ryots would separate their cattle by themselves; they throw cattle on the *bhagar*, and the moochees get the *bhagaria jumma*, or right of removing hides; the hides go to Calcutta. There is pasture land for cattle (fallow land), but less than formerly; the cultivated area has increased at the expense of the pasture land. The ryots keep more cattle now than they used to do. Cattle are taken to Calcutta for the butcher market by *pikars*; when they want to buy or sell cattle they go to Pudobilla; they also purchase and sell by private contract; cattle stealing has prevailed in this quarter, but does not do so now to any extent. It is done by *goallas*, and they carry off the cattle to villages in the direction of Jessore. The thieves do not retain the cattle, they hand them over to other persons. Cattle poisoning is known in this quarter and occasionally suspected. If the moochees are prevented removing the hides where a number of suspicious deaths are occurring, it will put a stop to the mortality.

Treatment.

Separation.

Disposal of carcasses.

Hides.

Pasture land.

Number of cattle.

Cattle trade.

Cattle stealing.

How conducted.

Poisoning.

Mode of prevention.

Can recognise symptoms. The ryots can detect cattle poisoning, and are quite able to protect their own interests.

Puschima. In *puschima* the stomach swells, and cattle die at once. Mr. Glascott says, that it always occurs after an inundation, and from eating rank grass that has been submerged. Is not sure of its being infectious. Cattle having had *gootee* may have *puschima*. Recoveries from *puschima* are very rare.

Cause.

Infection.

Khoorah is a sore state of the clefts of the hoofs (maggots), occurring in the dry weather. It is infectious, and not fatal; sheep and goats get the disease *gootee*. Mr. Glascott has been 9 years in this country, and has never seen *bussunto* so general or fatal as in this year; never seen such a long drought. Has seen *puschima* twice after the severe inundations of 1861 and 1869. The price of cattle has doubled in the last 10 years. This is owing to greater demand for cattle. The circumstances of a cow having had the disease does not enhance the price of cattle. Brahminee bulls are taken away by the agents of the Calcutta Municipality, but enough have been left for breeding purposes. Other bulls (Arias) are left entire and worked; they form a small percentage of those castrated.

Khoorah.

Season.

Infection.

Sheep and goats.

Disease more severe and protracted this year.

Price increased.

Reason.

Bulls.

JESSORE.

DISTRICT OF JESSORE.

H. Farrell, Esq.

From H. FARRELL, Esq., *Veterinary Surgeon, on Special Duty, to the Magistrate of Jessore, —dated Jessore, the 30th June* 1869.

On inspection I find the disease, which is of the same type throughout, is known to the natives as *gootee* or *bussunto*, and in the Soonderbuns as *puschima, dukina.* It is a low form of typhoid fever, and similar in every respect to the rinderpest or murrain of Europe.

History.

2. The disease, I learnt, has been known for several years in the district. It appeared as an epizootic five years back, but its ravages were confined to a small portion of the country, and the mortality not very great. It is of yearly occurrence, mostly during the months of January, February, and March, and sometimes in August and September, sporadic cases appearing here and there; nothing to cause alarm, and the loss is said not to be more than 5 per cent.

Murrain in 1869.

3. This year it broke out with great violence about the middle of February in three or four parts of the district simultaneously, spreading very rapidly and causing great mortality. After a duration of some twenty days it met with a check, which lasted for some three weeks, and broke out afresh in April, and has been gradually spreading and raging ever since. In and around Jessore, although a good deal abated, several cases have occurred lately. It has disappeared entirely from the villages in the Sub-division of Jenidah. The mortality, from the information I could obtain, was about 30 per cent. In the Sub-division of Magoorah the disease is raging to a great extent for the last two months in and around the village of Sutrajitpore, extending along both sides of the Nobogunga river to the villages for several miles inland. The villages in the neighbourhood of Nowhatta have suffered severely, and the disease is still raging to a great extent. The mortality in this part alone, within a circumference of ten miles, I should say, was over 1,000 head of cattle.

Mortality.

4. In the Soonderbuns I could find no disease having appeared in an epizootic form this year. In December, January, and February some cases of *gootee* appeared, but the loss was not very great. In April, in some of the Abads, Morrellgunge and Jorahkallee, some sixty odd head of cattle died from another disease which is more prevalent every year in those parts than *puschima* or *gootee.* This disease, as described to me, *viz.*, swelling of the off hind leg, mortification taking place and causing death, appears to me to be the "black leg" or "quarter evil" of Scotland. I had no opportunity of seeing any cases of the kind, but I gained the above information from Mr. Larymore, as assistant of Messrs. Morrell Brothers, who seems to have paid some attention to cattle disease. This disease is not so formidable as *gootee*, and is amenable to treatment and preventive measures. I left directions for the treatment and prevention of both diseases with Messrs. Morrell and Larymore and other gentlemen, who have promised to see them carried out. I have had copies of my instructions distributed to the natives.

"Black quarter."

5. In and around the villages of Phooltullah and Station Doomoria the disease is very bad.

6. I have personally visited all the infected villages, with the exception of Doomoria, which I purpose doing in a day or two. I have placed Salootrees at the different places with medicine and other necessaries to attend to the sick, and carry out the sanitary arrangements to prevent the further spread of the disease. I am happy to state the disease has succumbed to a great extent to the treatment and preventive measures adopted.

7. I am unable to give you the exact number of cases treated, cured, and died, as my reports have not been all received, but I hope to be able to do so in the course of a few days.

Magistrate.

Extract, paragraphs 6 and 7, from the Magistrate of Jessore's letter No. 986, dated the 10th July 1869, *to the Commissioner of the Presidency Division.*

Para. 6.—"The cattle owners are doing as little as they can for themselves. I was at Sutrajitpore in May and saw some diseased cattle. They were grouped together with healthy ones in the same shed, and at the door of this shed a dead one was buried to keep away the disease. I pointed out to the owner the folly of keeping the healthy and diseased ones together, and he promised to separate them. When Mr. Farrell went there a few days afterwards he found that no such separation had ever been made, and the man had lost every cow he had. Another man rushed to the criminal court to accuse Dr. Farrell of poisoning his cows, because they had died after receiving his medicine. Dr. Farrell complains of the apathy and indifference with which his advice is received, and traces much of the prevalence

Apathy of people.

JESSORE.

and extension of the disease to the absolute avoidance of precautionary measures. Diseased and healthy cattle are mixed; diseased villages are allowed to communicate disease to others; diseased skins are sold far and wide.

Para. 7. It is my opinion that as the law stepped in in England, where people are not so ignorant of their own advantage as here, so here also the legislature should give powers to compel cattle owners to do what they will not do for themselves." Law required.

From J. WESTLAND, Esq., *Officiating Magistrate of Jessore, to the Commissioner of the Presidency Division,—(No.* 169*G, dated* 12*th November* 1869. J. Westland, Esq.

I have the honor to forward Veterinary Surgeon Farrell's final report upon his operations in this district.

2. I much regret that I am unable to offer any additional report or information, as I was absent from the district during a very great part of the time Mr. Farrell was engaged in it, and was, therefore, unable to keep up my information regarding the progress of the disease. The information which was continually being submitted by the police is scattered up and down so large a mass of reports, that it would be mere waste of time now to collect it. Mr. Farrell's statistics, I believe, are reliable; he had ample means of collecting them, and nothing that I have heard leads me to imagine the actual loss of cattle to be greater than he reports. The reports usually given by ryots and zemindars are quite unreliable, for every isolated case of disease is with them a violent and extensive outbreak. Mortality.

3. I would endorse what Mr. Farrell says in one part of his report.—We have no reason to look upon these attacks of disease as something new and unheard of. All information of this sort now pours in to us from all quarters; from zemindars, from ryots, from the police, and from doctors, where previously it spread hardly beyond the circle where it was first developed; and I think that the apparent unhealthiness of the present and of a few past years, both in respect of cattle and in respect of human beings, is due at least as much to the extension of improvement of our sources of information as to any real increase in the prevalence of disease. An old disease.

4. Mr. Farrell mentions that he suspects that a good deal of poisoning went on, and I think the item of proof he brings forward is one of no small weight. He does not mention another matter regarding which he enquired, namely, that an extensive system of advances for hides was prevalent all over the district. Some hide traders undertake to supply large quantities of hides to merchants, and spread their advances far and wide among the chamars, who, in this district especially, are a most unscrupulous set of men. Mr. Barton, then officiating as Magistrate, caused some enquiries to be made when the matter was mentioned in Mr. Farrell's reports, but the charges were all vague and nothing definite could be traced. Poisoning.

5. I am well aware that, in times of epidemic, an ignorant populace is apt to attribute to the machinations of individuals what are really natural effects; but I am myself convinced that much of this poisoning system exists, and that the prevalence of a "rinderpest" affords a tempting opportunity to the chamars to exercise their nefarious practices. By every death the chamars are direct gainers, for it is the regular practice to throw out dead cattle to them. The chamars in fact have a sort of traditional right to it, and look upon their right just as a ryot looks upon his holding, calling it their *jumma*, sometimes at any rate paying rent for it, and very frequently bringing it into court in cases where a cow dies in a disputed place.

6. The utterly careless way in which most ryots keep their cattle, allowing them almost to shift for themselves, and leaving them, for long periods, entirely without supervision, ensures absolute impunity to any one who desires to accomplish their death; and it is plain that so long as cattle dying under suspicious circumstances are allowed to fall into the hands of the chamars, so long will they have a direct interest in poisoning them. The proposed rule which ordains the burial of the carcasses of diseased cattle, on sanitary grounds, will be the best possible preventive of the crimes of the chamars. Neglect of cattle. Burial.

7. I have to report separately regarding legislative proposals, and therefore say nothing here.

8. I have only to add that, during the past half-year, instructions about the treatment of cattle disease have been spread far and wide over the district, and if the legislature gives us power to enforce what the people should, in their own interest, do, we may expect that the "rinderpest," when it next enters the district, will leave it with inflicting but a small proportion of the loss which it has now caused. Law needed.

JESSORE.
H. Farrell, Esq.

From H. FARRELL, Esq., *Veterinary Surgeon, Royal Artillery, on Special Duty, to the Collector and Magistrate of Jessore,—dated 20th October* 1869.

In continuation of my progress reports, as per margin, on the subject of the cattle disease prevailing in the Soonderbuns, Jessore District, I have now the honor to submit an embodied report containing the chief points connected with my visits to the places herein named, *viz.*—

Of 30th June 1869.
„ 21st August 1869.
„ 14th September 1869.

1. Jessore and neighbourhood.
2. Chowgatcha „
3. Kotchanpore „
4. Kallygunge „
5. Jenidah „
6. Hazerapore „
7. Pulampore „
8. Magoorah „
9. Sutrajitpore „
10. Birendpore „
11. Nowhatta neighbourhood.
12. Nerail to „
13. Jessore thence to „
14. Koolnah „
15. Bagirhaut „
16. Morrellgunge.
17. Satkeera, 24-Pergunnahs, and neighbourhood.
18. Doomriah, Billaghatta, Bagirhaut, and neighbourhood.

No. 1, *Jessore.*—Agreeably to instructions received from the Commissioner, Presidency Division, the necessary supply of medicines was obtained from the Government Medical Stores, and having engaged the services of five Salootrees, I proceeded to that place, and reported myself to the Magistrate on the 18th May. I gained some information from the inhabitants of the place, and visited several villages in the neighbourhood, and discovered that, happily, the disease had nearly disappeared, and only a few cases remained. Twenty-seven were attended to and treated, of which 19 were fatal. It appears that the mortality has never been very great in this place and its environs, and that in this year (1869) it has been in excess of former years. I perceived that the owners of cattle are much more careful of them in every respect than they are in most places visited by me, which may account for the disease taking a milder form than usual, and being less destructive; indeed, I believe that much of the loss which has arisen in many parts of the country could have been prevented by ordinary attention to the food, shelter, and cleanliness of the cattle.

Mortality.

Care of cattle.

No. 2, *Chowgatcha.*—I next visited this place, and found that the disease did not then prevail. In conversation with some of its people, and chiefly with Mr. Macleod, an indigo planter, and resident of 30 years, I learnt that the disease has been known for years past, and that it appears more or less every year. He remembers one year, some time back, when it appeared in an aggravated form; more recently, deaths were so few that they did not attract any particular attention. In 1869 the disease made its appearance in January, and continued during February and March, in some villages on the right bank of the Cobaduck river; the loss was about 57 head of cattle. Here also unusual attention is given to the care of the animals.

History.

No. 3, *Kotchanpore.*—The disease has also been known in this district for several years, but the people with whom I conversed, especially Mr. Newhouse, manager of a sugar factory, state that it generally has taken a mild form. During this year (1869), however, it appeared with greater virulence, about the same time as at Chowgatcha, and along the right bank of the Cobaduck river; the manager lost nine fine cows from a herd of twelve, and many other owners of cattle suffered to a similar extent. Cattle are not numerous here, and there is not much attention paid to them. The chief occupation of the people is, however, attending to the toddy trees, and the manufacture of sugar therefrom. I can only account for the usual mild form of the disease from good water being procurable everywhere, and the land being higher and drier than common; indeed the water of the river is very clear and sweet.

Disease in 1869.

No. 4, *Kallygunge.*—The disease was so slight in this place and around it that the casualties were very few, and I was given to understand that it does not appear every year, most probably on account of the high land and sweet water in and around the neighbourhood.

No. 5. *Jenidah.*—When I visited this place, and the district in the vicinity, there was no disease amongst the cattle: on my way to it, however, I came across two convalescent cases in a small village. I was informed by several of the people, and by the Deputy Magistrate, Mr. Wright, (to whom I am much indebted for a good deal of information and for many hints on the subject of cattle disease and its causes, &c.,) that it had been very prevalent during the months of January, February, and March, when three-fourths of the cattle were carried off. For many years past it has prevailed regularly every year, but generally in a mild form, resulting in few casualties. The existence of cattle poisoners was first discovered in this place with the help of the Magistrate, as brought to notice in my report of 14th September.

Poisoning.

No. 6, *Hazerapore.*—Found that the disease in this place and its vicinity was somewhat similar in character and appearance to the account given about it at Jenidah. I conversed a good deal with many of the people, and with Messrs. Oates and Tweedie, indigo planters; the

JESSORE.
H. Farrell, Esq.
Poisoning.
Cholera.

former gentleman informed me that there was much cattle poisoning in the district, and the latter, that the disease during the past cold weather had followed the course of cholera. On this subject I subsequently made many enquiries, and from what I could gather, it appears to have been the case in some villages, but I could not procure any records, or any more reliable information to substantiate the opinion of those who noticed the matter. In future I purpose to attend to this particular point.

No. 7, *Pulampore.*—There was no disease prevalent when I visited this place, but I was informed by many people that it existed to a great extent at the commencemeut of the year. In the course of conversation with a chamar named Boycanta, a broker in hides, he mentioned that he had sold upwards of 7,000 hides during last cold weather, principally taken from cattle which died from the disease. I am inclined to think that very many of the casualties reported have been caused by posion : but more of this hereafter.

Hides.

No. 8, *Magoorah*—the head quarters of a sub-division—was visited several times ; there was little or no disease at the place ; but I was informed by the Magistrate, Mr. Waller, that it had been very bad in the district during February and March, when it abated for a time, and again broke out with great virulence in the beginning of May, especially at Sutrajitpore, about six miles from Magoorah, and the villages on the banks of the river Nobogunga. I was also informed that the ravages of the disease are great every year, which may be accounted for, in some measure, by the low and swampy nature of the country, bad drinking water, and the great apathy of the cattle owners, who would not listen to any persuasion or argument on the subject of sanitary and other arrangements, and were inclined to kick against preventive or curative measures.

Disease in 1869.

No. 9, *Sutrajitpore.*—This place is referred to in the preceding paragraph. On my visit to it I found that the disease had been raging for some time in and around the villages, and that it had extended to several villages down on the right bank of the Nobogunga river, and others more inland, the deaths averaging 25 to 30 daily. The country is low and swampy, the drinking water is not good, and the cattle owners are most apathetic and superstitious. A case in point will illustrate this, and their great ignorance. Mr. Westland, the Magistrate, on one occasion visited Sutrajitpore some time before I arrived, and observed a sick animal among a herd of about 20 head of cattle, belonging to a prosperous ryot ; the Magistrate recommended separation, cleanliness of stall, and other preventive measures, which the owner faithfully and thankfully promised to carry out. It remained for me, however, to discover that the ryot did not pay the slightest attention to the good advice he received from Mr. Westland, that the sick animal had died, and had been buried in the doorway of the cattle-shed, from a superstitious idea that the disease would never again cross the threshold.

Apathy of people.

When I arrived at the village the ryot had lost all his cattle but one, which was so ill that I recommended its destruction ; the owner agreed, and the animal was destroyed. Some days afterwards I was informed, to my great astonishment, that criminal proceedings had been instituted against me by the same ryot for killing animals in the district for their hides. The man had been instigated to the act by the chamars of the place, who found their trade stopped to a great extent by the burial of animals without removing their skins. In Nos. 5 and 6 sections it is noticed that destruction of cattle by poison had been discovered, but it was in Sutrajitpore that the matter first came under my personal observation, from peculiar symptoms in several cases of disease which caused me to suspect that poison had been administered. To verify the suspicion, I had a small portion of the contents of the fourth stomach of two deceased cases given to a common pariah dog and to an ordinary sized Bengalee goat : the dog died within six hours afterwards, the goat the next day, both expiring in great agony.

Poisoning.

No. 10, *Birendpore.*—This village is on the left bank of the river Nobogunga, opposite Sutrajitpore on the right bank. During my visit there was little disease prevailing among the cattle, but I learnt that it had prevailed in the early part of the year, and reached to many other villages on the same bank, causing great mortality. The ryots here, for the first time in my hearing, openly expressed their opinion that there was foul play on the part of the chamars.

No. 11, *Nowhatta.*—Eight miles below Birendpore on the same bank of the river. Here the disease appeared in February 1869, extending inland to many villages, and had been raging with great virulence to the time of my visit in the end of May, the deceased cattle numbering thousands. During my visit to several neighbouring villages I found that ryots who had formerly owned three or more hundred head of cattle, had very few left, some of them not five out of their large herds. The information I obtained from the natives was confirmed by Mr. R. Savi, an indigo planter and zemindar, who has been a great loser by the disease. Notwithstanding his great loss of cattle, I understand that the out-turn of indigo in his factories has far exceeded that of any factories in the district.

Losses.

No. 12, *Nerail.*—Head quarters of a sub-division in charge of Mr. Deare, from whom I learnt that the disease had appeared in the beginning of the year, but was not followed by

JESSORE. H. Farrell, Esq. Hides.

much loss of cattle: it was greatest in a few villages situated in the vicinity of a hât for the sale of hides. From this place I returned to Jessore to arrange for proceeding to the Soonderbuns.

No. 13, *Jessore.*—*See* No. 1.

No. 14, *Koolnah.*—In the Soonderbuns, head quarters of a sub-division, in charge of Deputy Magistrate Gour Doss Bysack, who informed me that there had been very little disease; none came under my observation. I missed at this time the pleasure of a conversation with Mr. H. Rainey from his absence in Calcutta.

No. 15, *Bagirhaut.*—Head quarters of a sub-division, in charge of Deputy Magistrate Srish Chunder Biddyarutna, who informed me that there was little or no disease in the early part of the year; it appeared, however, in August and September. *See* section 18.

No. 16, *Morrellgunge.*—A large zemindaree belonging to Messrs. Morrell, from whom I learnt that there was no disease at the period of my visit; that it had appeared slightly in the beginning of the year with little mortality; and that every year there were more or less signs of it among the cattle, but not attended with much loss. The cause of this fortunate immunity from disease and loss is quite visible. The majority of the villages belong to the zemindars: they are kept clean, and the cattle are well cared for and well sheltered, fully exhibiting the humane and liberal spirit which influence the owners of the estate. Well would it be for the ryots, the country, and the Government, were zemindars generally to follow their example in the management of their estates, and in their dealings with the ryots and other people depending on them.

Care of cattle.

No. 17, *Satkeera.*—A sub-division. This place was visited agreeably to instructions received from the Commissioner of the Presidency Division. On the way to it, I called at *Hosenabad* and *Tankee*, where I inspected a few cases. On my arrival at Satkeera I reported myself to the Deputy Magistrate, Poorun Chunder Ghose. I found that the disease had much abated, and that a few cases only remained in some villages about 12 miles distant. The outbreak, as in most cases, had appeared in the beginning of the year. I did not wonder at its occurring in this place, looking at the low and swampy country, and the indifference and utter carelessness of the ryots, who scarcely ever attend to or house their cattle. For the greater portion of the year they are allowed to remain out in the fields, exposed to every description of weather, hot, cold, and wet, and without any food except the scanty herbage which they are able to pick up in their wanderings.

Causes.

No. 18, *Doomriah, Billaghatta, Bagirhaut.*—The two first places are Police thannahs, under the jurisdiction of the Koolnah Sub-division Magistrate. Having visited each of them and their neighbourhood, I found that in the beginning of the year a few cases were noticed without attracting any particular attention. The disease then appeared to die out, but unfortunately it broke out again in the month of August in a virulent form, when there was much loss of cattle in and around the places mentioned, and the villages in their vicinity, especially in Doomriah and the adjacent hamlets. About the time of the last outbreak, dealers with unusually large herds of cattle for sale came to the district; the animals were weakly and half-starved from travelling long distances and readily took the disease; and as they were nearly all bought by the ryots, the loss was chiefly among the purchasers, particularly in the *Bagirhaut* district. It was at this period I met Mr. Rainey, who appeared to take a great interest in the matter under report. I furnished him with some medicines and instructions for the treatment of cattle. I visited many of the cases above named repeatedly, and many others which require no particular remark; their introduction would swell this report to an inconvenient size, without any commensurate advantage.

I now proceed to briefly remark on the nature of the disease, the symptoms, treatment, &c., with such observations as may occur to me.

Nature of the Disease.—I observed it to be of the same type throughout, and known to the inhabitants as *gootee, bussunto, puschima, dukina, googlance*, &c., names which appear to be given according to the direction taken by the disease, or the severity or otherwise of the symptoms. It has been for several years back known in the country, and in many districts it is of periodical occurrence; many years back it raged as an epizootic. It assumes an aggravated form near or on the borders of swamps and bheels, and in the vicinity of hâts where hides are sold. I am of opinion that it is similar in every respect to the "rinderpest" of Europe, and it is of the same type of disease as that which appeared in the 24-Pergunnahs last year, as reported in the early part of this year; and from communications received from the Commissioners at Patna, Hazareebaugh, Dacca, and Assam, describing the outbreak which appeared among the cattle in their districts. I am convinced that *gootee* or *rinderpest* is the malady which has been reported through the authorities from various places to the Government of Bengal.

Names.

Nature.

On this subject two letters appeared in the *Englishman* in May and September 1869, by Mr. Rainey, a zemindar; the first describing a disease that he supposed was prevailing in the Soonderbuns, the next remarking on my report of 30th June 1869. The characteristics of

JESSORE.
H. Farrell, Esq.
Identity of *gootee* and *puschima*.

the distemper set forth by the writer escaped my observation entirely, although looked for after my perusal of the letter of May. Possibly the information was gained from hearsay, and not from personal inspection. The second letter supposes the existence of two distinct maladies, which is, as far as I can judge, an erroneous impression. I believe them, after careful personal observation and study of the subject, to be one and the same disease. In this belief I am supported by Professor John Gamgee, Principal, Albert Veterinary College, London, in his work on the Cattle Plague, London, 1866. Again, the word *puschima* is incorrect, it should be *puchima*, literally meaning coming from the west. It came from thence on its first appearance as an epizootic, which gave rise to the name. In these outbreaks the symptoms are more aggravated than in ordinary cases. When outbreaks come with great severity, death quickly ensues: not so in milder attacks. The natives call the first *puchima*, and the *gootee*, although they are not two distinct diseases. Were each particular symptom to be dilated on, as attacks occur in different districts, it would be easy to establish many new names according to the nature of each outbreak, &c., &c. In parts of the Soonderbuns the disease is known as *dukhina*, because the ryots remember that the first outbreak came from the south; in other parts it is known as *googlanee* from the peculiar grunt of sick animals.

Black leg.

During April 1869, in some of the *abads* of Morrellgunge and Tooskhally, about 60 head of cattle died from another disease, which is more prevalent in those parts than *puchima* or *gootee*. This distemper I did not witness, but it was described to me as a swelling of the off hind leg, rapid mortification taking place, and causing death. According to my belief, it is the "black leg" or "quarter evil" of Scotland, which I have often seen and treated in that country. The information in this matter I obtained from Mr. Larymore, an assistant of Messrs. Morrell, who is well informed on the subject of cattle. "Black leg" is not so formidable as *gootee*, being more amenable to treatment. It does not appear to be necessary to make any further remarks on the nature of the distemper under report.

Symptoms.—Are fully described in my report from Diamond Harbour, submitted early in 1869.

Origin.

Causes.—The disease has been known for many years in Lower Bengal: in some parts it has appeared annually, in others at intervals of two or three years. That the outbreaks have become more frequent and virulent there can be little doubt; last year in the Diamond Harbour district; this year, 1869, in Jessore, Soonderbuns, Assam, Patna (slightly), and in Chota Nagpore. I am strongly of opinion that the distemper is of spontaneous development, the virus finding a favorable habitation in the low, ill-drained, retentive soil of the country. Once it springs up, the contagion is propagated in various ways.

History.

It is argued by some people that the malady of "rinderpest," and the various names given to it in India, is of recent importation, which I very much doubt: that they are all one and the same as "rinderpest" I am convinced. I could find no trace, record, or memory of the distemper having been imported at any time. It has been known to exist in this country for upwards of fifty years. The first outbreak that was felt severely occurred in 1817, and it has come at intervals short or long ever since. There are many reasons for its increasing virulence, and for its attracting general attention. Of late years facilities of locomotion, and the great and increasing demands for hides, disseminated the disease. A marked decrease in the culture of cereals, to make room for cotton and gunny cultivation for foreign markets, affects the care and food of animals which are neglected by their owners in every way; overwork, scanty food, bad shelter, and utter indifference to breeding, rendering them unable to resist disease of any kind. In fact, I believe the Bengalee ryot of the present day to be the worst cattle-master in the world, from what I have observed in many parts of India, the United Kingdom, and parts of the European continent.

Carcasses.

Again, carcasses were scarcely ever buried; they were skinned, and left to the vultures and dogs, thus spreading contagion. The malady always appears in the worst form in the vicinity of hâts for the sale of hides, which are sent all over the country to infect the neighbourhood wherever they go. Stringent rules for preventing the removal of such hides, and for burying carcasses entire, and deep in the earth, would go a great way in stopping outbreaks. An order by His Honor the Lieutenant Governor setting forth this, and directing all district officers to enforce this, has been circulated in the districts of Bengal, and which, I am able to say, has had the most beneficial effect. Instances of gross neglect in the food, shelter, and cleanliness of animals might be noticed by the authorities under the Act for the Prevention of Cruelty to Animals.

Prevention.
Quarantine.
Burial.

Prevention.—Too much stress cannot be laid on the means to be used to prevent the spread of contagion by good sanitary arrangements, quarantine when absolutely necessary, the segregation of cattle, ordinary attention to their food and shelter, and the free use of disinfectants. Strict attention to the burial of infected carcasses, with the skins, deep in the earth, is also a desideratum. It will not only help to stop the spread of contagion, but it will prevent, to a great extent, foul play on the part of the chamars, who have done so much mischief heretofore.

JESSORE. H. Farrell, Esq.

I believe that the stamping out system will never succeed in Bengal, and that it is in reality not required. As the distemper is not imported, being evidently of spontaneous production, the ignorant and superstitious natives will never understand that it is necessary to destroy these animals; it is opposed to their creed, faith, and prejudices; and I am much inclined to think that the measure, if enforced, would be followed by unpleasant consequences, and that altogether it would do more harm than good. I have before stated, at page 121, that in the one instance in which I carried it out, even with the consent of the owner, a criminal suit was instituted against me in the Magistrate's Court.

Stamping out, inadvisable.

The preferable course will be, as far as I can judge, to control and check the malady in the promptest manner according to the means pointed out, and now very well known in various places, especially at the very commencement of the outbreak in any hamlet, town, or place. Mild persuasion and tact with the natives will always have more effect than forcible measures in matters mixed up with their religion.

Treatment.

Treatment.—I still assert my belief that there is no remedy that will prove successful as an antidote to the malady when virulent; and that eradication must take place by prevention, especially in those places where the climate, soil, and bad management of cattle produce the distemper. The chief remedy in prevention will be to bring outbreaks under control by effective sanitary and hygienic measures, to be enforced firmly and gently.

In first stages, I have always found that the administration of saline purgatives, followed by tonics and stimulants, were effective; sulphur fumigation is always efficacious. In letter No. 1503 of 11th August 1869, from the Government of Bengal, the trial of carbolic acid is directed. Last year I procured a small quantity from Messrs. Corfield and Co., and used it partially in the 24-Pergunnahs, but did not give it a full trial. So far, however, it appeared to be a good and useful medicine. When proceeding to Jessore, I obtained a large quantity from the Government Medical Store-keeper, and used it freely in Jessore and the Soonderbuns, and distributed small portions to Messrs. Morrell and Rainey for trial. The chief effect it has is to disinfect the alimentary canal and the excretions, thus rendering the virus of the disease innocuous to the animal by not poisoning its blood, and to neighbouring animals by disinfecting and deodorizing the secretions, which so much extend the contagion. It therefore acts like any other antiseptic, and is, no doubt, a beneficial medicine; but it will never prove a specific for the distemper. I have likewise used it with some effect combined with quinine, chiretta, and bhung. I have in hand a series of experiments with carbolic acid, which I hope to be able to notice at a future period. They require time to carry out.

Carbolic acid.

The treatment adopted by me, and widely circulated in the various districts, is herein abstracted from the printed circular issued in August and September 1869: "When an animal takes ill, separate it immediately from the others. Give as a purgative half a seer of common salt in one seer of rice-water (*conjee*), or 8 ounces Epsom salts: calves, half the doses. If this does not act in six hours, repeat the doses. When the purgative has acted, give the following every three hours:—

Directions for medical treatment.

Carbolic acid (Calvert's No. 5)	10 drops
Chiretta or bhung solution	1 ounce

To make the chiretta and bhung solution put one seer of ether in eight seers of water, boil for half an hour, and, when cold, strain for use.

Carbolic acid with 10 grains of quinine is also good.

In the absence of the above medicine, give—

Asafœtida	½ tolah
Bhung or chiretta solution	1 ounce

To be given every three hours;

or,

Asafœtida	½ tolah
Black salt	1 „

To be given every three hours.

The sheds must be fumigated with sulphur three times a day, morning, noon, and evening; sulphur thrown in the fire will answer; about one-fourth chittack each time.

The animals must be made to inhale sulphur twice a day. This is done by throwing some sulphur on a pan of live coals, and holding it under the animal's nose for ten minutes at a time.

JESSORE.

H. Farrell, Esq.

The disease being of a very weakening nature, the animal must be nourished throughout, and the best thing is boiled rice-water (*conjee*), or *suttoo*, three or four times a day, or oftener if necessary. When dysentery sets in, give the following—

Kuth	...	½ tolah.
Opium	...	½ „

Twice a day in water *conjee*.

As a tonic and stimulant in the latter stages, the common country liquor, in doses of a chittack or so, will be found useful. This is to be recommended in all cases.

The signs of recovery are warmth of the ears and roots of horns and extremities, and return of appetite. When this takes place, let the animal eat sparingly, and not gorge itself, and give green grass in small quantities, and bran mashes when procurable, or a little *muskulli* well boiled; in fact soft food of any kind that is easily digestible. The animal must not be put to work too soon after recovery.

Inoculation.

It is possible that inoculation of cattle might succeed as a preventive measure, but its introduction would require time, and experiments to ascertain its usefulness or otherwise.

Poisoning.

Observations on the subject of poisoning cattle are fully set forth in my report of 14th September 1869, submitted to the Magistrate at Jessore, for the information of Government. I can only add that the eradication of this vile practice would be attended by the most happy results in respect of the cattle belonging to the ryots in many places throughout the country.

I give an abstract exhibiting the number of cattle attended to by myself and the *Salootrees*, together with the number of deaths which occurred before my arrival. As the police do not appear to have kept any records or returns, the figures of the latter are given at half the numbers reported to me by the zemindars and ryots concerned. They exaggerate such losses so much that their numbers are not at all reliable.

Casualties from 20th May to 25th August 1869.

	Sick.	Cured.	Died.
Jessore and neighbourhood	91	23	68
Jenidah	63	28	35
Magoorah and Nerail	1,742	734	1,008
Koolnah	627	210	417
Bagirhaut	147	72	75
TOTAL ...	2,670	1,067	1,603
Percentage of attacked	...	39·9	60·1

Deaths before 20th May.

	Died.
Jessore and neighbourhood	50
Jenidah	37
Magoorah and Nerail	1,117
Koolnah	84
Bagirhaut	67
TOTAL ...	1,355

Finally, I have much pleasure in noticing the cordial assistance given to me and my people by Mr. Westland and the other Magistrates, by Mr. Anley, District Superintendent of Police, and by the various indigo planters and other gentlemen residing in the places I visited.

H. J. Rainey, Esq.

Information furnished by H. J. RAINEY, Esq., *Zemindar, Khoolnah, Jessore, dated 3rd May* 1870.

Locality.

My property lies across the sub-division of Khoolnah, District Jessore. I have also made observations throughout the district more or less, particularly in the Soonderbuns portion thereof, but not very systematically.

My own land extends three or four square miles in the immediate neighbourhood of my residence.

JESSORE.

H. J. Rainey, Esq.

Geography.

My immediate neighbourhood is thus situate :—North and east are wide and rapid streams, the Bhoyrab and Rupsa rivers respectively; on the south is a rather sluggish and narrow river, the Gupi Nadi; and on the west various villages and paddy lands. Ground to the north comparatively high, and not inundated during the rains, excepting some *chur* or alluvial formations, where paddy is cultivated. To the south the lands are low and swampy, such as are merely adapted for the cultivation of paddy. I have to add that the closing of the aforesaid Gupi Nadi by *bunds* or dams for certain months in the year, during the cold weather and dry season, by order of the Deputy Magistrate of this Sub-division, will contaminate the water therein, which the cattle then drink, as the tanks are dried up about that time, and the other rivers are away some two miles from the villages in its proximity. The soil to the north of the district is more or less sandy, and to the south sandy too, but with a plentiful admixture of saline deposit, which renders the earth, when saturated, excessively slimy. Rice being the staple produce of the district, it is *mainly* cultivated throughout its length and breadth, and miasma is therefore strongly prevalent bi-annually at fixed periods, once at the *commencement* of the rains, when the grounds are ploughed up, and again *after its close*, when the lands begin to dry: at both these times vegetable decomposition takes place, and the fermentation which thereby ensues causes the emission of sulphuretted hydrogen gas, the presence whereof can be easily detected by that peculiar pungent acrid odour which one occasionally finds tainting the air in marshy localities, and similar to the nauseous smell produced by rotten eggs. If analytical chemistry ever solves the *vexata quæstio* regarding the constituent parts of that at present unknown compound miasma, the above gas will no doubt be found to be the basis of it, I venture to think, and the true germ of all the so-called zymotic diseases in both man and beast.

Number of cattle.

I cannot of course be precise as to the numerical strength of cattle, but I should say there is about 100 head in each square mile, which multiplied by 4 gives an aggregate of 400 to my locality.

Breed and value.

There is only one breed of cattle, the small Lower Bengalee breed, hardy and enduring, but lacking power and bulk. It is however not ill-adapted for the district, while the present primitive state of agricultural cultivation prevails.

As regards the value of cattle, plough bullocks fetch from Rs. 10 to 15 and more per head; the average is about Rs. 12. Milch cows somewhat less—Rs. 10, I should say.

The present prices have been enhanced 25 per cent., if not more, within the last 10 years.

Uses for which cattle are employed.

Bullocks of this locality are exclusively employed for ploughing purposes. Cows are of course kept for the dairy, though a few Mahomedans do not stick at putting these cows to the plough, when hard pressed and unable to afford to purchase or hire bullocks.

Cattle are employed for the cultivation of paddy from April to September; for mustard, from September to November, according as the rains cease early or late. These are the only two crops extensively cultivated in this district, the former in the low, and the latter in the high lands, which description of lands also produce the *ause* or early crop of paddy.

Cattle belonging to the locality are exclusively employed for ploughing. During the cold weather, when the harvest is off the ground, herds of bullocks are brought from the north of the district to carry the grain from the fields into the houses of the villagers. *In this manner epizootics are easily propagated from the south to the north of the district.*

Cattle employed for the plough are often subject to cruel treatment from Mussulman agriculturists, but none are in any way particularly cared for or tended. Bullocks employed for draught purposes, either in the cart or plough, have invariably more or less galled necks, caused by the sharp edge of the cross pieces of wood which rest on those parts cutting into the skin and flesh. Any simple device, such as a well stuffed pad about that portion of the wood which fits the neck, would remedy this universal evil, but unless authoritatively enjoined, *e. g.*, by legislative enactment, no good will accrue. No amount of mere recommendation will do the least good.

As a rule, the treatment cows receive is of course better; but here too neglect is often the case.

About one-fourth of the cattle or perhaps less are employed for dairy, the rest for draught.

Housing.

Cattle are housed in open sheds, *i. e.*, houses with thatched roofs and unenclosed sides, at night in all seasons of the year, except during the very hot weather, when they are kept in the open to get the benefit of the free air, and which also keeps off the mosquitoes from troubling them too excessively.

Feeding and watering.

Cattle get their food by grazing mainly, being supplied with a little fodder, straw only occasionally. They are taken to rivers, tanks, or *khalls*, whichever be closest at hand, for water, utterly without regard to its being pure or not.

The kinds of grass eaten by cattle are :—

Doob grass in the high pasture lands, *i. e.*, those fields not submerged in the inundation ; and, in the low lands, a long and luxuriant species of grass, called by the natives *Uri or Ooree*, and in appearance like the rice plant. These two are mainly the kinds of grass used as food, and being well known, I need not enclose specimens of them. The fodder used is exclusively straw. These remarks apply only to my immediate neighbourhood, *i. e.*, within 4 square miles of my residence ; but towards the north of the district, the cattle, during the inundation, are fed, I believe, with some species of aquatic or semi-aquatic plants or grass growing in the *bheels* or lakes.

Herding.

Cattle are herded by day only during all seasons.

A cowherd (usually a young lad, who is not old enough to hold a plough) has generally charge of a herd of cattle, numbering from 15 to 20 head, and he takes them to pasture early in the morning, and seldom returns with them before the afternoon, about sunset. The cattle are allowed usually to graze unfettered, unless standing crops are contiguous to the pasture lands, when they are tied with strings round their horns about 12 to 15 feet long, fastened to a peg driven into the ground.

Cattle are never taken from one district to another for pasture.

General condition of cattle.

The general condition of cattle is indifferent. Very little care and attention is bestowed on them, which appears to proceed from a combination of ignorance and apathy so characteristic of the Bengalee *chásá* or agriculturist. Cattle have to depend on pasture for food very nearly altogether *in this locality*.

Stock, how kept up.

The stock of cattle is kept up both by breeding and importation from the north of the district. About one-half is supplied by breeding.

No special bulls are kept. No systematic plan appears to be resorted to, but cows are allowed to be crossed indiscriminately by any stray bull that frequents the same pasture.

The other and remaining half is supplied by importation of cattle from the north of the district, from marts or bazaars near Jessore station, Pulta, Nobutta, &c., &c. The average price paid, Rs. 10 to 15 per head.

Cattle are usually bought and sold in open *hâts* at particular markets, as above indicated.

There is no report of export of cattle from these parts.

Hide trade.

There is very little trade in hides about these parts of the Jessore district, *i. e.*, southern portion thereof.

There are very few traders indeed, and they have not increased to my knowledge. I refer to my locality.

The price of hides has increased, I should say, but no more than proportionately with all other marketable articles, *i. e.*, about 25 to 30 per cent.

Every *moochee* picks up all the skins he can get, and then disposes of them to dealers elsewhere, who send them to the Presidency for sale.

Mortality.

The mortality among cattle is ordinarily about 5 per cent. per annum ; in epizootics, according to their virulence, averaging from 10 to 20 per cent., and even more.

History of plagues.

Epizootics may be said to break out periodically twice a year within this district, in a mild form, in the same manner as epidemics of fever and cholera. This may be said to be the normal condition, which passes without any special notice, and they only occasionally rage with virulence, when the predisposing causes happen to accumulate.

They occurred very severely in 1859, 1867, and 1869, as far as I am able to recollect.

Character of plagues.

Plagues are of various kinds :—Sore-feet, with fever supervening, from hot and parched up ground, before the rains set in. Choleraic diarrhœa and small-pox (called by natives *puschima* and *gootee* respectively), at different times periodically increased by such circumstances as permitting cattle to drink impure and stagnant water, or feed on unwholesome herbage, *i. e.*, pastures inun-

JESSORE.

H. J. Rainey, Esq.

dated for any great length of time. It is spread by herding and housing together all cattle indiscriminately, both healthy and diseased, as well as allowing them to graze in the same pastures. The duration of outbreaks is uncertain altogether. If an outbreak occurs in its usual mild form, it passes away in a fortnight or three weeks: if it assumes a virulent form, it lasts for six months or so, proceeding gradually onwards, *i. e.*, spreading around from its focus.

Statistics.

As regards statistics, having nothing precise to offer, I cannot supply any reliable *data*, but I give the following figures as approximately correct.

The proportion per cent. of attacked varies considerably from 10, 15, 25, 30 to 50 per cent. and even more, according to the virulence of the plague. When mild, almost all recover; when virulent, hardly any. This applies to *puschima* and *gootee*, in which diseases, when virulent, medicines appear to have no good effect, (at least such as are administered by the natives,) and nature, when allowed to take her own course, does cure at times. Sore-feet, however, seldom proves fatal, unless greatly neglected.

Kind of cattle most liable to attack.

There is only one breed in this district, as before stated. Young cattle and females appear most liable to attack at the *commencement*, as far as I could judge; afterwards all appear to be seized with it without distinction. But 'sore-feet' draught bullocks appear most liable to attack, as they have to work over hot and dry ground when the rains are late.

The symptoms of the most prevalent cattle diseases are as follows:—

Symptoms.

There is shivering in *puschima* and *gootee*.

Appetite and rumination.

In these diseases loss of appetite is invariably, and in fact a premonitory symptom of them. In 'sore-feet,' also, fever supervenes, and the mouth becomes sore also.

In *gootee* eruptions are of course invariable. In the other plague, *i. e.*, *puschima*, the skin becomes rough, body hot, and hair damp, &c., &c. Swelling of tongue and throat occur very markedly in the last stages of *puschima*, and is considered a very unfavorable sign.

Difficulty in breathing, cough, &c., are common to both *puschima* and *gootee*.

The bowels are always worked in both the aforesaid diseases. Blood and mucus are discharged in severe cases only of such plagues. The secretion of milk is always more or less decreased: sometimes suppressed almost entirely; certainly invariably altered and unwholesome, quite unfit for food.

Animals find, or appear to find, relief in lying down.

Contagiousness.

The three diseases specified are all contagious, but sore-feet less so than the other two.

Treatment.

Native remedies are in cases of *puschima*, chillies, pepper, and other irritants. Dr. Farrell appears to have tried carbolic acid to some extent, and he was good enough to give me a small supply, but I could not induce the natives to permit me to administer it to their cattle, so I had no opportunity of testing it.

Native remedies are useless, or rather worse than useless, being positively injurious. Dr. Farrell told me he had some success with carbolic acid, I believe.

Sanitary measures.

No sanitary measures are systematically adopted. Here and there only, segregation is resorted to, under compulsion. Disinfection is utterly unknown. Fires have been recommended, but never practised to my knowledge. Separation of sick and healthy is rarely done. Generally the *chásá* or agriculturist cannot afford to house them separately, and is stolidly ignorant of its obvious advantages. Burial of carcasses is always evaded, except when owners are actually compelled by the Police to do so; and their interference is undesirable, as it affords them an opportunity of indulging in their *penchant*, oppressing and extorting money from the helpless ryot. Hides, if not too putrid, are at once skinned off by the *mooclees*, and sold to dealers, as usual, along with other hides. No use whatsoever is made of the horns and hoofs, at least hereabouts, and they remain on the ground where the carcass has been cast, generally in an open field where cattle graze. Here is another prolific course from which the plague spreads.

Affection of other animals by plague.

Poultry suffer occasionally when *gootee* among cattle is very virulent. I have never observed any other *tame* animals suffer therefrom, not having paid sufficient attention to this part of the subject, but have been told that sheep and goats are not exempt from the contagion. I have once or twice, if not oftener, come across carcasses of deer in my wanderings in the interior of the forests of the

Soonderbuns in quest of *shikar*, evidently destroyed by some plague, and that before the disease had developed, or even shown itself, among cattle. *Puschima* (choleraic diarrhœa) is also designated by the natives *dukhina*, because it travels from the *dukhin* or south; hence may it not be possible that the plague originates with the (wild) deer, and from them communicates itself to the cattle in the Soonderbun grants, and gradually spreads northward and eastward? These designations, to wit, *puschima* and *dukhina* (indicating the directions west and south, from whence the disease spreads), are well borne out, for if it commences in the extreme limits of the western Soonderbuns, *e. g.*, in the Diamond Harbour sub-division, it can only advance northward and eastward (*vide* map), as the wide Hooghly river effectually prevents its progress westward. I would solicit some degree of attention being bestowed upon the circumstances here adverted to, as I think some important inferences might be drawn therefrom, if investigated by such competent authorities on the subject as the members of the Commission.

Coincident epidemics.

Though man and beast may and do suffer occasionally together, *i. e.*, epidemics and epizootics have been found to rage at the same time, I do not think the latter in any way contributes to the production of the former, or *vice versâ*; but simply because they are both due to similar causes. As my opinions have been asked, I give them candidly and fully, in answer to this, as well as other questions, but I would add that I do so with extreme diffidence, as being those of a non-professional addressed to professional gentlemen possessed of special experience on the subject. I may add that I think I should have used the terms 'endemic' and 'enzootic' instead of 'epidemic' and 'epizootic.'

Disease at present prevailing.

The only disease prevailing at present is sore-feet with fever, more or less everywhere, from the ground being hard and hot for want of rain. *Gootee* is *said* to have exhibited itself to the north-east of the district, but I cannot vouch for the correctness of this statement, being a mere rumour among the lower classes of natives.

Weather.

Very hot and dry weather always produces sore-feet—a most troublesome disease (though not dangerous), as it disables cattle at the beginning of the period when agricultural operations commence. Sometimes *puschima* and *gootee*, especially the latter, are produced by similar causes. A heavy fall of rain often, but not always, sweeps away every sort of plague.

Remarks.

Bathing, a most wholesome practice, essential in a tropical climate, appears to be systematically neglected, and ploughbullocks, after being hard worked in wet rice-fields, are often, in fact usually, permitted to return without the puddle with which they are thoroughly bespattered being washed off. Cleanliness cannot absolutely, under such circumstances, be expected to exist at all, and the dirt and filth thus engendered on the body conduces to the animal's liability to attack from every form of disease, particularly cutaneous and eruptive disorders, *e. g.*, small-pox or *gootee*, if it does not itself produce them.

Shampooing.—A good rub down after a day's hard work would do a great deal of good in keeping the animal in health and condition, and amply repay the very little extra trouble occasionally required. It is, however, wholly unnecessary for me to refer to and dilate on the advantages to be derived from such a practice, which, I need hardly add, is *never* resorted to.

ORISSA DIVISION.

COMPRISING THE DISTRICTS OF CUTTACK, BALASORE, AND POOREE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch.			p. 133.
Orissa Division.	*R. N. Shore, Esq., Commissioner of Cuttack.*	14	10*th May* 1864 ...	*Selections, Bengal Government, p.* 50. *Reports extensive prevalence of cattle murrain in the Division.*
Cuttack.	*T. E. Ravenshaw, Esq., Commissioner of Cuttack.*	539	17*th November* 1866	*Selections, Bengal Government, p.*137. *Reports outbreak of gootee disease among artillery cattle.*
Cuttack.	*W. Macpherson, Esq., Magistrate, Cuttack.*	256	26*th February* 1870	*Reports prevalence of gootee in* 1869.
Pooree.	*T. E. Ravenshaw, Esq., Commissioner of Cuttack.*	539	17*th November* 1866	*Selections, Bengal Government, p.* 137. *No cattle disease since* 1864.
Pooree.	T. Walton, Esq., Officiating Magistrate, Pooree.	73	26th January ...	Reports extensive prevalence of cattle disease in 1869-70. Appendix No. 3.
Balasore.	*N. Jackson, Esq., M. D., Civil Medical Officer, Balasore.*	64	*May* 1866 ...	*Selections, Bengal Government, p.* 110. *Reports prevalence of gootee in* 1863.
Balasore.	*T. E. Ravenshaw, Esq., Commissioner of Cuttack.*	539	17*th November* 1866	*Selections, Bengal Government, p.*138. *Reports that no disease has occurred since* 1863.
Balasore.	*J. Beames, Esq., Magistrate, Balasore.*	13	17*th January* 1870	*No cattle disease.*
Cuttack.	*T. E. Ravenshaw, Esq., Commissioner, Orissa Division.*	255	5*th September* 1870	*Report existence of cattle disease in Cuttack and Pooree.*
Cuttack.	*Baboo Kalinath Bose, Deputy Magistrate, Kendrapara.*	160	27*th September* 1870	
Pooree.	*W. Irvine, Esq., District Superintendent of Police, Pooree.*	434	26*th September* 1870	
Pooree.	*J. Walton, Esq., Officiating Magistrate, Pooree.*	600	13*th October* 1870....	*Reports existence of foot and mouth disease in Pergunnah Kotdesh.*

HISTORICAL SKETCH.

No early record of murrain in this division exists, and until the year 1864 no attention appears to have been bestowed on the subject.

1863. Disease is said to have "raged fearfully" in 1863 in the Tributary Mehals running west of Cuttack to a distance of 150 miles, and more than half of the cattle in the killahs (forts) south of the river Mahanadi are said to have been lost. An epizootic occurred in 1864 in the district of Balasore, where the disease *gootee* or *bussunto* (rinderpest) was said to be "well known," and to prevail every two or three years and commit great ravages. The characteristic symptoms of the disease are described by Dr. N. Jackson, the Civil Surgeon.

1864. Murrain is stated by the Commissioner, R. N. Shore, Esq., to have "shown itself very extensively" in the districts of Pooree and Balasore in the same year. The Collector of Pooree estimates that the stock of cattle in his district has been diminished one-half.

1866. Up to 1869 no general outbreak of disease is reported, with the exception of an attack of foot and mouth disease, which occurred in 1866 among the artillery cattle in the station of Cuttack. A letter was sent on the subject to the Bengal Government by the Commissioner, T. E. Ravenshaw, Esq., in November 1866, which states explicitly that, with the exception above noted, there was no instance of the recurrence of the disease since 1864.

1868. Another notice of rinderpest among the artillery cattle at Cuttack is contained in one of Mr. Thacker's Madras Reports, dated 31st March 1869. He says:—

"A telegram from the Commissary General on 18th November 1868 informed me that artillery cattle at Cuttack were dying from 'diarrhœa and fever combined.' He requested me to forward instructions to the officer commanding relative to treatment and medicines if necessary. Believing that this was an outbreak of rinderpest, I at once forwarded instructions for segregation and despatched medicine, the successful results of which will be seen in the following letter from the officer commanding:—

"With regard to preventive measures of segregation, I have to report a complete success. Your letter was received on the 29th November, and in a day or two afterwards the bullocks were divided as recommended by you. After the separation of the cattle, one bullock only was taken ill and died in a few days. Since this bullock was taken ill no other animal has shown any signs of disease whatever, and all those in detached parties have remained up to this time in a perfectly healthy condition."

1869. Towards the close of the year 1869 disease broke out in the districts of Cuttack and Pooree, and continued into 1870.

1870. In the former district the nature of the disease was not described, and was reported to be prevalent in nine villages of the Bargong Pergunnah. Later reports show the prevalence of "cattle-pox" in September 1870 in seven villages of the Ramito and Utikun Pergunnahs on the banks of the Noona river.

In Pooree the disease was more widely spread and invaded several villages of five pergunnahs. Both rinderpest and foot and mouth disease appear to have prevailed simultaneously.

HISTORICAL SKETCH.

In this district also, a September outbreak is described in twenty-six villages of the Pergunnah Kodhar and Thannah Gope. A later report, dated 13th October, describes the prevalence of foot and mouth disease in some villages of Pergunnah Kotdesh. Balasore is reported to have been free from disease in 1870.

It thus appears that both rinderpest (called *thakrooni, bussunto, or gootee*) and foot and mouth disease (called *phatua* and *chowa*, according as it prominently affects the feet or mouth) frequently prevail in the districts of this Division, more particularly, it would seem from information casually obtained, in the breeding tracts on the Orissa seaboard and at the base of the hills. Orissa is one of the great breeding grounds of Lower Bengal for cattle, and on this account the disease has not perhaps obtained in this Division the attention it deserves. No sufficiently urgent or exact information of existing disease was received by the Commission to warrant a journey both long and expensive. The reports forwarded detail the symptoms of both diseases with sufficient precision to leave no doubt as to their identity, but they do not offer any further information which would render their publication desirable. They are therefore omitted.

DACCA DIVISION.

COMPRISING THE DISTRICTS OF DACCA, BACKERGUNGE, FURREEDPORE, MYMENSINGH, SYLHET, AND CACHAR.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	.....	Page 137.
Dacca.	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870 ...	Report in Form No. 1 of severe outbreak of "pox" in April and May 1870. Page 140.
	Baboo Kaleenath Ghose ...		.....	
	F. B. Simson, Esq., Commissioner of Dacca.	235	16th June 1870 ...	Further report referring to the same outbreak. Page 141.
	Baboo Poorno Chunder Ghose		.....	
Backergunge.	*C. T. Buckland, Esq., Commissioner of Dacca.*	197	*28th September* 1865	*Selections, Bengal Government, p. 63. Describe a severe outbreak of cattle disease in this district, which commenced in April and lasted till September.*
	H. C. Sutherland, Esq., Magistrate of Backergunge.	92	*29th July* 1865 ...	
	Ditto Ditto ...	111	*4th September* 1865	
	C. E. W. Bensley, Esq., Civil Assistant Surgeon, Backergunge.	108	*26th August* 1865 ...	
Furreedpore.	*C. T. Buckland, Esq., Commissioner of Dacca.*	26	*17th March* ..	*Selections, Bengal Government, p. 48. The Civil Medical Officer gives a short sketch of cattle murrain as it prevails throughout Bengal.*
	F. B. Simson, Esq., Commissioner of Dacca.	154	*20th April* 1870 ...	*Report in Form No. 1 of the attack of two head of cattle by "Bengacheed"— an affection caused by eating poisonous grass.*
	N. T. Alexander, Esq. ...		.....	
Sylhet.	*C. T. Buckland, Esq., Commissioner of Dacca.*	26	*17th March* 1864 ...	*Selections, Bengal Government, p. 48. The Civil Surgeon, Dr. Brown, describes the symptoms of cattle disease prevailing in Sylhet.*
	F. B. Simson, Esq., Commissioner of Dacca.	87	10th March 1870 ...	Reports severe and widespread outbreak of cattle disease in Sylhet. Page 139.
	F. B. Simson, Esq., Commissioner of Dacca.	129	4th April 1870 ...	Gives additional particulars of the above in Form No. 1. Page 139.
	J. Patch, Esq., District Superintendent of Police		.....	
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870	Gives details in Form No. 1 of prevalence of cattle murrain in 1870. Page 140.
	W. B. Maxwell, Esq. ...		.....	
	J. S. Drummond, Esq. ...	380	17th June 1870 ...	Reports in Form No. 1 a further outbreak of cattle disease in May 1870. Page 140.
	W. B. Maxwell, Esq. ...		.....	

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Mymensingh.	*C. T. Buckland, Esq., Commissioner of Dacca.*	26	*17th March* 1864 ..	*Selections, Bengal Government, p.* 48. *Notes yearly occurrence of bussunto.*
	F. B. Simson, Esq., Commissioner of Dacca.	391	26th August 1869	Report outbreak of "smallpox" among cattle in July 1869. Page 141.
	O. T. Stack, Esq., District Superintendent of Police.	624	16th August 1869	
	R. Porch, Esq., Joint Magistrate.	369	18th August 1869	
	F. B. Simson, Esq., Commissioner of Dacca.	154	20th April 1870 ...	Report in Form No. 1 the prevalence of disease in several parts of the district.
	R. Porch, Esq., Magistrate	369	20th January 1870	
Cachar.	*Capt. J. F. Sherer, Superintendent of Cachar.*	605	*7th December* 1863	*Selections, Bengal Government, p.* 5. *States that cattle murrain of the kind referred to (Madras murrain) seems never to have raged in Cachar.*
	F. B. Simson, Esq., Commissoner of Dacca.	87	*10th March* 1870 ...	*Superintendent reports that cattle disease does not prevail in any part of the district.*
	F. B. Simson, Esq., Commissioner of Dacca.	154	*20th April* 1870 ...	*Ditto ditto.*
	F. B. Simson, Esq., Commissioner of Dacca.	360	10th November 1870	Reports the existence of disease in Mymensingh and Sylhet.
	Ditto ditto	366	15th November 1870	Reports the prevalence of cattle disease in Mymensingh.

HISTORICAL SKETCH.

A very important and curious glimpse of an early history of cattle disease in this Division is obtained through the results of an effort made by the Medical Department to obtain vaccine lymph primarily from the cow. The details of the experiments, correspondence, &c., in this matter are in part contained in the "Transactions of the Medical and Physical Society of Calcutta," Vol. VIII, Part 2, pp. 94-106 of Appendix.

As the Sylhet experiments have a very interesting relation to the subject of the present inquiry, the following summary of these observations and experiments has been made :—

1833. Dr. Furnell, Civil Surgeon of Sylhet, having read and become interested in Dr. Macpherson's experiments at Moorshedabad (see Rajshahye Division) in September 1833, endeavoured to repeat them. He found that cattle in the vicinity were affected with *matah*, and selected one recovering, which had a number of dry scabs all over its body. Four children were inoculated from this animal without effect. Mr. Brown in Dr. Furnell's absence renewed the trial and inoculated several children, the first four direct from the cow, and many others from these. The vaccine vesicle appeared on the eighth day in all cases. One European child got severe fever on the eighth day, succeeded by an eruption resembling confluent small-pox, which ran through apparently the same course as natural small-pox. In the case of his own child a similar event occurred, but with a fatal result, the mouth becoming so sore that no nourishment would be taken. Another European child suffered severely in a similar manner; but none of the native children inoculated presented any alarming symptoms, and the utmost precautions were taken to exclude variolous infection. The disease is also stated to have prevailed among the cattle of Cachar at the same time. Owing to the result of these trials being so unsatisfactory, no further experiments were made on this subject.

1836. A very interesting notice of *bussunto* by Mr. Lamb, Civil Surgeon of Dacca, is contained in a letter addressed to the Superintending Surgeon of his Circle, on the subject of the regeneration of vaccine. The following is an extract referring to cattle disease, from which it appears that the same disease prevailed in the same manner then as now :—

"The disease among cattle, known under the appellation of *bussunto* or *matah*, *sitlah* or *gootee*, chiefly prevails during the months of December, January and February, though not quite unknown at other seasons of the year. When a cow or bullock is first attacked, there is a discharge of saliva from the mouth; then follows universal tremor, with great heat of the head, chest, and body, as far back as the loins; while the hind-quarters are cold. The whole body then becomes hot, and the animal suffers from intense thirst, the flow of saliva ceases and the mouth becomes dry and hot. After the fever has existed a day or two, the hair becomes so loosely attached, that the slightest rubbing brings it off in handfuls. On the fifth day the eruption appears about the udders, sometimes only a few pustules, at other times they are numerous and confluent; but the result does not seem much dependent on the eruption. Whether the pustules are numerous or rare, the disease is almost equally fatal, and unless measures are taken to separate the infected from the healthy, it speedily runs through the whole herd, sparing few. In those which do escape after taking the infection, the favorable symptom is a spontaneous diarrhœa, in which the dejections are large, watery, and offensive. The treatment is sometimes guided by this indication afforded by nature, and a variety of vegetable purgatives are employed, but more generally is limited to absurd mummery and fanciful magical incantations.

"When the hair is rubbed off after the pustules have appeared on the udder, the skin is found covered with sores; many die before the eruption makes its appearance, but the fever is known by the discharge of saliva, by the falling off of the hair, and loosening of the teeth. In favorable cases, three or four days after the eruption has come out, the teeth acquire firmness in the gums, and the animal is able to pick up a little grass. Cattle are said not to be subject to a second attack of *matah*; sometimes the disease is exceedingly fatal, at other times it is comparatively slight, without much reference to season or apparent cause; it is, however, at all times greatly dreaded, and with reason, as it is too often the cause of utter ruin to villagers whose whole wealth is in their cattle. I have been unable to discover instances of its frequent co-existence with small-pox among the natives, and the disease is little known in

HISTORICAL SKETCH

town. Among the cattle kept by the oil manufacturers or for milk last year, when nearly a thousand deaths from small-pox occurred in Dacca, the disease only appeared in one muhalla, and for a short period; and I was not aware of its presence till it had ceased, after carrying off fifteen or twenty cows."

During a period of 24 years (1836-60) no written record of cattle murrain has been furnished from this Division.

1860. Dr. Brown, Civil Assistant Surgeon, Sylhet, informs the Commissioner in 1863 that a cattle murrain prevailed in the district in 1860, but that since then no cattle disease has appeared: the symptoms detailed are distinctive of rinderpest.

1863. Captain J. F. Sherer writes in December 1863, that no cattle murrain has ever existed in Cachar; but it will be noted that Mr. Brown states that murrain prevailed in Cachar in 1833.

1864. Mr. C. T. Buckland reports on cattle diseases as known in the different districts of the Dacca Division in 1864. He quotes Dr. Bolanath Bose, of Furreedpore, who states that "the disease is well known in Bengal," and that "there is hardly a year in which one does not hear of some cattle mortality during the hot weather from this source." Dr. Bose is reporting on the rinderpest described by Captain Nelson in Madras (8th July 1863). Mr. A. T. Maclean, Officiating Magistrate of Mymensing (5th March 1864), states that disease somewhat resembling that described by Captain Nelson yearly attacks cattle in Bengal, at the change from the cold to the warm weather. The disease is similar to small-pox in man and is called *bussunto*. It is described as destroying thousands of cattle.

1865. In 1865 a very severe and fatal outbreak occurred in the district of Backergunge. The disease was imported from the adjoining district of Jessore across the Balissur river. It is reported to have raged in several villages on the Jessore side of the river in February 1865, and appeared in the Perozepore Sub-division in April. The disease spread over the Tugrah, Angaria, and Bishkhalee Thannah jurisdictions, and continued to rage till September, when it seems to have declined. The mortality in the whole district is estimated by the Magistrate, Mr. Sutherland, at 30 to 40,000. In the Sub-division of Perozepore alone, 14,399 head died, of which 13,199 are said to have died in the Tugrah Thannah. Mr. Sutherland observes that the loss by murrain has "brought ruin to thousands of ryots." From the careful detail of symptoms given by the Civil Surgeon, Mr. Bensley, it is evident that this murrain was rinderpest.

1866. In 1866, Dr. Brown, of Sylhet, was informed by a European gentleman that the disease was common about 70 miles to the south of the district. Mr. F. B. Simson, Commissioner of Dacca, reports (26th August 1869), that in 1866 a fatal murrain occurred among the cattle of Mymensing in July and August.

1869. An equally fatal murrain broke out in this district in the same months of 1869. In March 1869 cattle disease broke out in the Abidabad Police Station of the Sylhet District, and in September and October in Moolagool, Nowakhally, Tajpore, Chattuck, Lawoor, and Shonamgunge Thannahs, and out of 42,000 attacked, 13,700 are said to have died. The disease seems to have continued to rage in this district up to May 1870, and a subsequent report in November 1870 states that disease was still prevailing in the district. In the district of Mymensing, disease broke out in September 1869 and continued to rage till January 1870. A slight outbreak was again reported by Mr. Simson in the Pingnah Pergunnah in November 1870.

1869. In the Dacca District "small-pox" is reported to have broken out in the Thannahs Ryepoor and Roopgunge about April or May 1869, and in Thannah Manickgunge in March.

1870. In March 1870 the disease is reported to have prevailed in the same locality.

DISTRICT OF SYLHET.

SYLHET.

From F. B. SIMSON, Esq., *Commissioner of Dacca, to the Secretary to the Government of Bengal, Judicial Department,—(No. 87, dated 10th March* 1870).

With reference to the Officiating Junior Secretary Mr. Mackenzie's letter No. 2669, dated the 4th December last, and its annexure, I have the honor to state that the Magistrates of Backergunge, Dacca, Furreedpore, Mymensing, and the Deputy Commissioner of Cachar report that the cattle disease does not now exist in any form in their districts.

2. The Magistrate of Sylhet reports that the disease made its appearance first in Abidabad, and thence gradually extended towards Soonamgunge, Lawoor, Chattuck and other places; that the mortality is very great in Abidabad, Nowakhally and Tajpore; that out of 10,000 cattle attacked in the jurisdiction of these three stations about 8,000 have died, and that the recovery is very good in the jurisdiction of Soonamgunge, Lawoor, Chattuck, and Moolagool.

Information supplied by J. PATCH, Esq., *District Superintendent of Police, Sylhet, dated 25th January* 1870.

District Sylhet.—The names of the mouzahs cannot be enumerated. The disease is spread all over the jurisdiction of Moolagool, Nowakhally, Tajpore, Chattuck, Lawoor, Soonamgunge, Abidabad Police Stations, and has just made its appearance in the town of Sylhet. The name of the disease is *Batun* বাতান।

Locality.

The date of outbreak of this disease cannot be ascertained. In the jurisdictions of Moolagool, Nowakhally, Tajpore, Chattuck, Lawoor and Soonamgunge, the disease made its first appearance in September and October last, and in Abidabad in the month of March 1869.

Date of outbreak.

Statistics. The number of cattle attacked was 42,000, or 42·2 per cent. of stock.

The number of cattle which have died is 13,700. or 13·8 per cent. of stock, and 32·6 per cent. of attacked (taking a proportional number of the cattle still ill, the deaths will amount to 18,477, or 18·5 per cent. of stock, and 44 per cent. of attacked.)

The number of cattle which have recovered is 17,440, or 41 per cent. of attacked (adding a proportional number of the cattle still ill, the recoveries will amount to 23,523, or 56 per cent. of attacked.)

The number of cattle still ill 10,860, or 11 per cent. of stock.

The number of cattle belonging to the villages is 99,500. This is the total number of cattle in all the villages within the jurisdictions of the above Police Stations.

[*These numbers are not to be taken as absolutely correct, but they evidently furnish a fair approximation. C. P. C.*]

Infectiousness. The disease is supposed to be infectious.

Origin. The natives of this district suppose that cows imported from other districts have brought it with them. They also attribute it to scarcity of rain.

Symptoms. The symptoms of the disease are as follows:—

There are eruptions on the feet and mouth only; the eyes and mouth water; the body is hot; there is labored breathing generally, sometimes accompanied with cough; there are shivering fits; there is difficulty in breathing generally, sometimes accompanied by swelling of the throat; the urine is changed into a dark-yellow colour, the dung is watery, discharged at intervals in small quantities; the coat is as usual; the average duration of attack before recovery or death is five or six days.

Treatment. The natives generally keep the sick cattle in mud and water continually for four or five days. They use, as a cure, ginger, salt, pepper, neem leaf, *bewadah, gooroondah,* and this is often attended with a marked success. They also feed the sick cattle on new green grass, and they curtail their drink.

[*N. B.—The two diseases rinderpest and foot and mouth disease—have been evidently mixed up in this statement. C. P. C.*]

SYLHET. *The following information regarding cattle disease in Sylhet is furnished in Form No. 1 by* MR. W. B. MAXWELL, *and forwarded with* MR. SIMSON'S *letter No. 154, dated 20th April* 1870.

Locality. The parts of the Sylhet District in which cattle disease has prevailed are,—in Pergunnah Juntory, Mouzahs Ryabad, Kanaipore, Adettpore, and Duttgao—Thannah Nobeegunge; and in Pergunnah Baniachung, Mouzahs Makhalia, Murdenpore, Moradpore, Bohampore and Bejoypore—Thannah Abidabad.

Diseases. The prevailing diseases are small-pox and *naktana*, or swelling of the throat.

Date of outbreak. These diseases broke out in the Mouzahs of the Nobeegunge Police Station in March, and in Abidabad in February last.

Stock. There are 4,600 head of cattle in the Mouzahs of Nobeegunge, enumerated above, and 825 in Abidabad, or 5,425 in all.

Number attacked. Of these, 435 cattle were attacked in Nobeegunge by small-pox, or 9·5 per cent. of stock, and 286 by *naktana*, or 6·2 per cent. of stock. In Abidabad about 400 have been attacked by small-pox, or 48·5 per cent. of stock; 836 have been attacked in all, or 15 per cent. by small-pox, and 286 by the other disease.

Number died. Four hundred and fifty-five have died of small-pox in both stations, or 8·3 per cent. of stock, and 54·4 per cent. of attacked; and 115 of *naktana*, or 2·1 per cent. of stock, and 28·7 per cent. of attacked; in all 570, or 10·5 per cent. of stock, and 50·8 per cent. of attacked.

Number recovered. One hundred and thirty cattle have recovered of small-pox, and 104 of *naktana*, and 181 are still ill of *naktana*, and 250 of small-pox =431, or 7·9 per cent. of stock.

Infectiousness. The disease is considered infectious, and its origin is attributed to excessive heat and want of rain.

Symptoms. The symptoms are as follows:—*Small-pox.* There are red eruptions on the whole body; eyes and mouth become watery; there is cough, laboured breathing, and swelling of the throat; the dung is watery and discharged in large quantity.

Naktana.—Skin as usual; eyes and mouth water; the body is hot; there is cough; sometimes laboured breathing; entire stoppage of the evacuations; swelling of the belly, and then death. The average duration of an attack of small-pox is six or seven days.

Treatment. The treatment employed by the natives for small-pox is,—first ginger, and then jack fruit with *kangee bhat* (rice gruel), and *holoncha* leaves. Particular care is taken to separate the sick cattle from those that are not attacked. The people of this district know no medicines for the other disease.

[*N. B.—The statistics in this statement are confused, and apparently not of much value. C. P. C.*]

A subsequent report by the same officer, dated 30th May 1870, states that small-pox (*sitlah*) has broken out in Pergunnah Begoorah, Mouzah Chundkun Boolah, and that among 400 cattle, 70 (17 per cent.) were attacked, 40 (10 and 57 per cent.) died, 10 recovered, and 20 (5 per cent.) were still ill.

The last report received from Sylhet (F. B. Simson, Esq., dated 10th November 1870) informs that the disease has broken out in the villages Hurripore and Monbeg, Pergunnahs Atooajan and Bajijutooa; that 61 head of cattle died during September.

DISTRICT OF DACCA.

Information regarding the prevalence of cattle disease in the Dacca District, furnished by BABOO KALLINATH GHOSE, *Deputy Magistrate, dated 8th February* 1870.

Locality. Disease prevails in Thannahs Raipoora, Roopgunge, and Manickgunge.

The disease is called pox, বসন্ত।

The number attacked, &c., is as follows:—

	Stock.	Attacked.	Per cent. of stock.	Died.	Per cent. of stock.	Per cent. of attacked.	Recovered.	Per cent. of stock.	Per cent. of attacked.	Still ill.	Per cent. of stock.
Raipoora and Roopgunge ...	About 10,000	1,974	19·7	1,683	16·8	85·	215	2·1	10·8	76	·7
Manickgunge ...	1,780	880	49·4	452	25·4	51·3	428	2·4	48·6	...	...
TOTAL ...	11,780	2,854	24·2	2,135	18·1	74·8	643	5·4	22·5	76	·6

Infectiousness. The disease is supposed to be infectious.

Origin. Its origin is attributed to the heat of the weather.

The symptoms are,—coat rough, the usual pox eruption on the skin, eyes and mouth water, body hot, a little cough and laboured breathing, occasionally shivering fits, bowels loose, evacuations red, urine red, duration from 2 to 12 days.

Symptoms.

No remedies have been applied.

Another report from Manickgunge, dated 4th June 1870, by BABOO POORNO CHUNDER GHOSE, Deputy Magistrate, says:—

Disease, small-pox বসন্ত, prevails in the villages Bundgram, Burdhankandi, and Bhaeea. Among 170 cattle, 86 (50·6 per cent.) were attacked, 46 (27 and 53·5 per cent.) died, and 40 (23 and 46·5 per cent.) recovered.

The disease makes its appearance in the beginning of Falgoon (middle of February), when heat begins. It is supposed that excessive heat causes the disease. From Falgoon to Jeyt (middle of February to the beginning of June), the cattle of the villages suffer extremely for want of good water both for bathing and drinking. Eruptions and swelling of the neck are said to be apparent occasionally.

Season.

DISTRICT OF MYMENSINGH.

From F. B. SIMSON, Esq., *Commissioner of Dacca,—(No.* 391, *dated* 26*th August* 1869.)

I have the honor to submit copy of a memorandum, No. 369, dated 18th instant, with its enclosure, from the Magistrate of Mymensingh, relative to a fatal murrain among cattle, and to state that in 1866 the disease prevailed with equal virulence at the same time of the year. It is very difficult to make any proper sanitary arrangements; the whole country is under water, and the cattle only exist on mounds, where they are crowded into far too limited spaces; but seeing that there is no other standing ground, what can be done. I do not suspect poisoning, because in 1866 the carcasses of the cattle were committed to the water unskinned, and the hides soon were useless; the heat and damp prevent successful preparation of hides at this season.

From O. S. STACK, Esq., *District Superintendent of Police, Mymensingh,—(No.* 674, *dated* 16*th August* 1869.)

I have the honor to inform you that the Inspector of Kishoregunge Division mentions in his diary of the 10th instant, that from July up to 9th August 285 cattle have been carried off by small-pox, and the disease is still raging in the under-mentioned villages where the cattle died:—

1, Chotrashote; 2, Kandigao; 3, Majpara; 4, Dareakandi; 5, Chundo Mundul's kandi; 6, Shomarkandi; 7, Lokemonerkandi.

All these villages are situated within the jurisdiction of Bazitpore Station.

Information regarding cattle disease in Mymensingh furnished by R. PORCH, Esq., *Joint Magistrate, dated* 20*th January* 1870.

The disease occurred in the following villages within the Attiah Sub-division of the District of Mymensingh:—Chuk Dhun, Porkhi, Berhari, Hatibundha, Barai, Gooatolah, Singar Dâk, and Náikáni.

Locality.

Name. The names of the diseases are small-pox and fever.

Date of outbreak. These broke out on the 7th Ashin 1276 B. S. (22nd September 1869.)

Statistics. The number of cattle attacked is 325.

The number of cattle which have died is 125, or 38·4 per cent.

The number of cattle which have recovered is 200, or 61·6 per cent.

Infectiousness. The disease is supposed to be infectious; all the above villages are close to each other.

Origin. The villagers attribute the disease to the swampy nature of the neighbourhood and bad water.

Symptoms. The symptoms of the disease are as follows:—

The body becomes hot; there are eruptions on the body and feet, &c.; the eyes and mouth water; there is cough and laboured breathing, and shivering fits occur; there is also swelling of the throat; the urine is red.

MYMENSINGH. The average duration of attack before recovery or death is five days.

Native medicines were administered, and some of these were found to be very efficacious.

From F. B. SIMSON, Esq., *Commissioner of Dacca,—(No.* 360, *dated* 10*th November* 1870.)

With reference to your letter No. 474, dated the 20th September last, I have the honor to state that the Magistrates of Backergunge, Dacca, Furreedpore, and the Deputy Commissioner of Cachar report that at present no sickness of an epizootic nature is prevailing among the cattle in their respective districts.

2. The Magistrate of Mymensingh reports that cattle disease made its appearance only in the jurisdiction of Pingnah, but the outbreak appears to be a slight one, and will probably have passed away before the Commission could arrive at the spot.

* * * * *

From F. B. SIMSON, Esq., *Commissioner of Dacca, to the President of the Cattle Plague Commission, Calcutta—(No.* 366, *dated* 15*th November* 1870.)

In continuation of my No. 360, dated 10th instant, I have the honor to forward herewith copy of a letter from Mr. Reily, District Superintendent of Police, Mymensingh, No. 644, dated 5th instant, regarding the outbreak of cattle disease in some villages of that district, and to state that the disease generally appears to prevail about this season, and may abate. But it is to be observed that the inundation this year was higher and lasted longer than was before known in the memory of the oldest inhabitant. All grass has been terribly injured by this inundation, and, as far as I can tell by personal observation and gather from report, cattle have died from starvation, and the survivors are so thin and weak, and still so scantily supplied with grass fit to strengthen them, that future mortality seems inevitable. If disease attacks them, they have no strength to resist it. After the rice now ripening is cut, the cattle will run over the stubble fields and get better food, but I fear the next few months will be marked by an unprecedented mortality which no human measures can prevent.

From H. M. REILY, Esq., *District Superintendent of Police, Mymensingh, to the Magistrate of Mymensingh,—(No.* 644, *dated* 5*th November* 1870.)

In reply to your memorandum No. 248 of the 30th September 1870, I have the honor to inform you that sickness amongst cattle prevails within the jurisdiction of stations Doorgapore, Pingnah, and Jamalpore.

2. The villages in the Doorgapore Station where the sickness now prevails are Kochodhohur, Phoolpore, Bagber, Moro, Baroipara, Ghoraid, Bhowanipore, and Khoojioora. In the Pingnah Station cattle are suffering in the villages of Gopal Dhigha, Malihari, and Meerhainjalli; in the Jamalpore Station in the villages of Bhangabari, Poolalli, Poorkhalli, Goonaritollah, and Bhillamari.

* * * * *

4. In Doorgapore the cattle are said to refuse their food for three or four days, breathe heavily, and waste away.

5. At Pingnah, the throat swells, food is refused, and an eruption breaks out all over the body, to which the cattle eventually succumb. In some instances the stomach simply swells, and the cattle die apparently from not being able to digest their food. Others die from a swelling in the throat and are unable to eat. At Jamalpore the cattle suffer in the same way as at Doorgapore.

From BABOO TARINI PROSAUD ROY, *Deputy Magistrate of Attiah, to the Magistrate of Mymensingh,—(No.* 273, *dated* 15*th December* 1870.)

In continuation of my letter No. 227, dated the 24th October last, I have the honor most respectfully to state that I have received a report from the Pingnah Police, to the effect that the cattle diseases which had lately broken out in some of the villages within the jurisdiction of that Thannah, as mentioned in my letter above referred to, have now ceased.

CHITTAGONG DIVISION.

COMPRISING THE DISTRICTS OF CHITTAGONG, TIPPERAH AND NOAKHALLY.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch.	...	.....	p. 145.
Tipperah.	*W. Gordon Young, Esq., Commissioner of Chittagong.*	11	20*th January* 1864	*Selections, Bengal Government, p. 7. Stating that cattle disease has for many years prevailed.*
	J. A. Greene, Esq., M. D., Civil Medical Officer, Tipperah.	106	18*th May* 1866 ...	*Selections, Bengal Government, p. 106. Report on cattle disease which occurred in* 1865.
	Baboo Bhogoban Chunder Bose, Deputy Magistrate, Nassirnugger.	...	7*th May* 1866 ...	*Cattle disease which prevailed in Nassirnuggur described.*
	C. E. Lance, Esq., Commissioner of Chittagong.	259	14*th September* 1866	*Selections, Bengal Government, p. 123. Report on outbreak of cattle disease, and comment on the outbreak of* 1866.
	F. Millet, Esq., Magistrate of Tipperah.	669	18*th August* 1866 ...	
	W. B. Pratt, Esq., District Superintendent of Police.	...	.....	*Selections, Bengal Government, p. 135. Reports on the extent to which disease prevailed in* 1866.
	J. A. Greene, Esq., M. D., Civil Medical Officer.	153	30*th October* 1866...	*Selections, Bengal Government, p. 136. Offers a few remarks on the* 1866 *disease.*
	Lord H. Ulick Browne, Commissioner of Chittagong.	361	18th February 1870	Reports that no disease exists in Chittagong, but that it has prevailed in Noakhally, Tipperah, and the Hill Tracts of Chittagong, p. 146.
	E. D. Lockwood, Esq., Magistrate of Tipperah.	1227	18th December 1869	Report on the sanitary treatment of epizootics, p. 146.
	Ditto ditto	1266	21st December 1869	Gives the varieties of cattle disease prevalent in the district, p. 147.
	Ditto ditto	22	11th January 1870	Furnishes additional particulars of cattle disease in 1869, p. 148.
	Ditto ditto	57	22*nd January* 1870	*Form No.* 1 *carefully filled in.*
	Ditto ditto	68	26*th January* 1870	*Report of outbreak of small-pox in one village.*
	Ditto ditto	103	3*rd February* 1870	*Report of cattle disease, Thannah Goureeparah.*
	D. Hine, Esq., Magistrate of Tipperah.	903	26*th August* 1870...	*Reports that cattle disease does not prevail in any part of the district.*
	Ditto ditto	1020	12*th October* 1870...	*Intimates that no disease exists in the district.*

Index of Records.

District.	From whom received.	Number.	Date.	Reference and Purport.
Noakhally.	*W. Gordon Young, Esq., Commissioner of Chittagong.*	11	*20th January* 1870	*Selections, Bengal Government, p. 7. States that cattle disease frequently prevails.*
	G. H. Whinfield, Esq., Magistrate, Noakhally.	52	21st February 1870	Gives particulars of a severe outbreak of cattle disease which occurred towards the end of 1869, p. 149.
	Baboo Jogodishnath Roy, District Superintendent of Police.	948	28th December 1869	
	Ditto ditto	955	30th December 1869	Ditto p. 150.
	G. M. M. Ridsdale, Esq., District Superintendent of Police, Noakhally.	446	*12th November* 1870	*Reports the existence of small-pox and hoof disease in many villages of the station of Kattia.*
	Ditto ditto	478	*5th December* 1870	*Reports that disease had disappeared after* 169 *cattle had died.*
	Ditto ditto	527	*28th December* 1870	*Gootee has again appeared at a village, Kacheeakhally.*
Chittagong.	*W. Gordon Young, Esq., Commissioner of Chittagong.*	11	*20th January* 1864	*Selections, Bengal Government, p. 7. States that cattle disease has never occurred.*
	F. W. R. Cowley, Esq., Joint Magistrate of Chittagong.	59	21st January 1870	Gives an account of cattle disease which prevailed in the district in 1869, p. 151.
	A. King, Esq., Assistant Superintendent of Police.	7	5th January 1870	
	F. W. R. Cowley, Esq., Joint Magistrate of Chittagong.	73	*24th January* 1870	*Reports that no cattle disease exists in the district.*
	H. C. B. C. Raban, Esq., Officiating Magistrate of Chittagong.	1329	17th October 1870	Reports that cattle disease exists in several villages of the Chittagong District, p. 152.
	Ditto ditto	1381	*20th October* 1870...	*Intimates that no epizootic exists in the district.*
	Ditto ditto	1394	*28th October* 1870...	*Explains that the last report referred only to the town of Chittagong.*
	Major W. M. Graham, Deputy Commissioner of Chittagong Hill Tracts.	383	*8th November* 1870	*Reports that there is no cattle disease existing in the Hill Tracts.*

HISTORICAL SKETCH.

1864. W. Gordon Young, Esq., Commissioner of Chittagong, writing in January 1864, states, that in the district of Noakhally cattle murrain frequently appears in September and October, and that in Tipperah "it has been for many years past very destructive among the cattle."

In Chittagong, "where cattle are not numerous, no such murrain has apparently ever prevailed." The disease is called *bussunto* and *Burrapera*.

1865. In Tipperah disease (*matah, sitala or bussunto*) prevailed throughout the district, and in July and August attacked the cattle of the sudder station Commillah. The detail of symptoms leaves no doubt that it was rinderpest.

1866. Rinderpest continued to prevail very extensively in the district up to the month of September, 1866. The mortality appears to have been very great, and type of the disease virulent.

1868. No record of the year 1867 has been furnished, but in 1868 rinderpest is said to have been very prevalent throughout the district of Tipperah, and caused a mortality of three or four thousand.

1869. The disease continued to spring up in different localities throughout Tipperah, and the mortality is thought to have been even greater than in 1868. The district of Noakhally was also this year severely visited, and *bussunto* (rinderpest) was reported to prevail very generally. In Chittagong, also, a partial outbreak of the same disease took place in the sub-district of Cox's Bazaar.

1870. Lord H. Ulick Browne, Commissioner of Chittagong, in a letter, dated 8th February 1870, states that cattle disease does not prevail in the Chittagong District; that in Tipperah there is little disease; in Noakhally it has prevailed largely during the last three or four months, and in the hill tracts of Chittagong it was rather bad three or four months ago. "The truth I believe to be that the disease comes and goes, is virulent and mild at intervals in most districts."

In November a report was received from Tipperah that *gootee* (small-pox) prevailed in many villages of the Station Ballia. A subsequent report, dated 5th December, intimated the disappearance of the disease after 169 cattle had died, and a still later letter, dated 28th December, informed that the disease had re-appeared in one village, where seven cattle had died.

Mr. Raban, Magistrate of Chittagong, reported, on the 17th October, that "small-pox" was prevailing in the Chittagong District, having broken out in September: 107 cattle had died among 130 attacked in a stock of 750 head.

Subsequently, no disease was reported to prevail in the district, but this was afterwards explained to refer to the town of Chittagong. This division was not visited by the Commission, because the reports received were too indefinite to undertake a long and expensive journey upon; but the papers appended to this summary will conclusively prove that the same diseases affect cattle in the districts of the Division, very much in the same manner as they do elsewhere in Bengal.

TIPPERAH.

DISTRICT OF TIPPERAH.

From LORD H. ULICK BROWNE, *Commissioner of the Chittagong Division, to the Secretary to the Government of Bengal, Judicial Department*—(*No.* 361, *dated* 18*th February* 1870).

With reference to the order of Government, No. 2669, dated the 4th December 1869, enquiring whether cattle disease in any form now exists within this Division, I have the honor to report as follows for the information of the Lieutenant Governor.

The disease is not supposed to be active in the Chittagong District just at present.

The Magistrate of Noakhally says that it prevailed largely in the district during the last three or four months, but it has since abated.

The Collector of Tipperah reports that, so far as he can learn, cattle disease has always been more or less prevalent in the district, but there is little of it just at present.

The disease has only lately made its appearance in the hill tracts, where there are few cattle; it was rather bad about three or four months ago, but no complaints have been heard lately.

The truth I believe to be that the disease comes and goes, is virulent and mild at intervals in most districts.

From E. D. LOCKWOOD, Esq., *Magistrate of Tipperah, to the Commissioner of Chittagong,* —(*No.* 1227, *dated* 8*th December* 1869).

With reference to your memorandum No. 215, dated 9th November 1869, I have the honor to submit the following preliminary report.

2. I am informed that the cattle disease called *gootee* has always been more or less prevalent in this district, but this year there have been comparatively few deaths from it.

Sulphur. Last year a quantity of sulphur (20 seers) for fumigation on the English plan was distributed to the various Police Stations, but the people, with their usual apathy, do not appear to have troubled their heads much about the matter; the experiments made by the Police were received very coldly by the persons interested, and, although the supposed remedy was promulgated as much as possible, I am not able to learn that the owners of cattle have availed themselves of it.

Condition of Cattle. 3. The cattle of this district, however, are as wretched specimens of the species as can be conceived,—generally mere skin and bone,—consequently, when seized by sickness, they succumb very quickly.

Deterioration of stock. 4. I believe that the race of cattle throughout Bengal has degenerated very considerably of late years in consequence of the absence of the Brahminee bulls which fed on the fat of the land.

Formerly the calves, at least on the father's side, came of good stock, but of late years the custom of dedicating bulls to idols has gone out of fashion, particularly as the fate of such animals now-a-days generally is to draw municipal carts and rollers instead of roaming about the country as they pleased. The wonder is, seeing the present state of cattle in the district, that on the occurrence of an epidemic, such as *gootee*, they are not all swept away. *Gootee* can hardly be called an "epidemic;" however, in this district, like cholera, it is always more or less prevalent, though never assuming the form of a general pestilence.

Cause.

Law. "Stamping out." 5. There appears nothing objectionable in the draft Act proposed by Mr. Blechynden, but there would be great difficulty in "stamping out" cattle disease in a Hindoo village by a judicious slaughter of infected cattle. The pious Hindoo would rather see his family perish before his eyes than have recourse to such an unholy expedient. The Mussulman community also would resort to a thousand subterfuges rather than give up the faintest hope of saving their cattle.

Sanitary measures. 6. The only preventive to the disease spreading in the present state of society will be I think, in placing the large cattle marts under the surveillance of the Police and preventing the sale and importation of diseased cattle. Many of the natives are very knowing on the subject of cattle and their diseases, having lived amongst them from their infancy; such persons, not otherwise objectionable, might be selected to report on the cattle at the principal hâts and fairs; at all events the mere fact of the Government taking up the matter would intimidate persons who otherwise would deal in diseased cattle with impunity.

7. The cattle pound fund is in a healthy condition, there being Rs. 3,613 in hand. TIPPERAH.

8. I will report further on the subject when I can get more information; at present all the likely persons whom I have asked do not appear to know much about it, and the few reports of the Police on the matter are too vague and unsatisfactory to act upon. I will also try and ascertain the mortality from cattle disease during the present year as compared with former years.

From E. D. LOCKWOOD, Esq., *Magistrate of Tipperah, to the Commissioner of Chittagong,*—(*No.* 1266, *dated* 21*st December* 1869).

In continuation of my report No. 1227 of the 8th instant, I have the honor to inform you that the principal cattle disease in this district is of three different kinds :—

Names.

I.—*Joran* and *gootee* জড়ন ও গুটী,

II.—*Batan* বাতন,

III.—*Golafula* গলা ফুলা।

Joran.

Joran (fever) and *gootee* (small-pox) are virtually one and the same disease, of which the former is merely the first and the latter the last stage; many of the natives say that small-pox amongst cattle was originally communicated by man, but on this point I am unable to give any opinion.

Symptoms.

2. The symptoms of *joran* are,—body feverish, hair erect, drooping ears, excessive thirst, drowsiness and repugnance to food; on the second or third day small-pox supervenes and pustules appear all over the body. The animal passes matter with a very offensive smell, and death soon after occurs.

Treatment.

3. The chief remedy used is the administration of so-called cooling drinks, such as rice-water and the juice of the plantain tree.

Batan.

4. The symptoms of *batan* are,—sores in the hoof, in the leg, and in the mouth, which soon generate maggots. The remedy used is bathing the diseased parts with turmeric water, and also keeping the animal *tied up in water.*

Golafula.

5. The *golafula* is the most fatal of all diseases, and carries off the affected animal in a few hours; the symptoms are a boil at the root of the tongue, which is succeeded by a slight swelling in the throat.

Mortality.

6. The mortality from *gootee* alone during 1868 is supposed to be about 3,000; whether the mortality during the present year has exceeded this amount or not I am unable to express a decided opinion, as the accounts which I have received on the subject differ very considerably; probably, however, the mortality has increased, and for reasons which I shall state presently it will continue to increase unless the Government interferes in order to check the disease.

7. The data which I have at present regarding the mortality of cattle throughout the district are necessarily very vague and unsatisfactory, but I suspect that few of the villages have escaped. The sub-division of Brahmenbareah appears to have suffered the most, and particularly Pergunnahs Burdakhat and Sherail, where cattle are said to be most numerous.

8. In consequence of the mortality amongst the cattle, the price of milk has risen very considerably; the chamars* have become prosperous, and the consumption of country spirits which, fluctuates with the condition of these people, has greatly increased.

* Dealers in skins.

Importation.

9. The cattle market is by no means supplied from the district, but there is a considerable importation from the districts of Dacca, Mymensing, Furreedpore, Pubna, and Rungpore, and, so far as I can learn, there is no exportation of cattle from this to other districts.

10. The cattle disease, however, does not appear by any means to be generally imported from other districts, but, so far as the memory of man extends, has been engendered and nourished in the district itself.

Disease indigenous.

11. There can be no doubt after a perusal of the foregoing remarks that the cattle disease has caused considerable anxiety and distress in this district, which is purely an agricultural one. If we ask the most intelligent natives if they can account for the increased prevalence of the disease of late as compared to preceding years, they generally fall back on the answer most satisfactory to their own apathetic nature, *viz.* that it is the will of God. I

TIPPERAH.

Struggle for existence.

think, however, there can be no doubt whatever that the prevalence of the disease arises from the great struggle for existence which is continually going on throughout the entire animal kingdom, including the human race. It may generally be stated as an axiom that where it is not kept down by other external causes, the number of animals in any country depends upon the amount of food obtainable. At the present time in this district a great struggle for existence is going on between man and beast, and the latter being the weakest, naturally has to succumb to his more powerful adversary. Every available beegah, which formerly afforded pasture to cattle, is now being brought under cultivation of rice for man, and even many of the jheels which formerly constituted vast pasture grounds for cattle are now—so urgent is the demand for human food—planted with long stemmed rice, and cattle seeking pasture there are driven away.

Pasture land.

12. The consequence of this is that thousands of cattle are born which cannot possibly exist: instead of dying of hunger, as they certainly otherwise would, their existence is put an end to by disease.

Cow-sheds.

13. I am informed that at some of the bheels in the north of the district *batans*, or long, narrow cow-sheds, are erected by enterprising persons, and into these the cattle are crowded in hundreds, and so full are they jammed that even the avaricious *batan-walla*, who receives 2 to 4 annas a head per month, is obliged to deny many cattle an entrance, and forces them to seek shelter alike from the heat of the sun and night dews under the neighbouring trees.

Remedies.

The chief remedy against the cattle disease, I have no doubt, would be rendering it imperative on all villages to set aside a portion of the village for pasture land.

Encouraging the race of Brahminee bulls so that the calves from their father's side at least may come of good stock.

Stringent orders to chamars regarding the skinning of diseased cattle.
Placing the cattle marts under proper surveillance.

From E. D. LOCKWOOD, Esq., *Magistrate of Tipperah, to the Commissioner of Chittagong,*—
(*No.* 22, *dated* 11*th January* 1870.)

In continuation of my reports Nos. 1227 and 1266, dated 8th and 21st December, and with reference to your memoranda, Nos. 301 and 312, dated 15th and 22nd December, I have the honor to make the following remarks:—

2. (1).—*Name of district.*—Tipperah.

3. (2).—*Name of disease in Vernacular or English*—*Joran* and *Gootee, Batan, Golafula* (throat-swelling).

4. (3.)—*Date of outbreak of disease.*—So far as I can learn, the above diseases have always been more or less prevalent in this district; the natives say *gootee* was caught from man.

5. (4, 5, 6, 7, 8).—During the past year about 3,000 cattle are supposed to have died in the district from the above diseases; probably double that number were attacked. *Golafula* is considered the most fatal, and few attacked recover.

6. The disease in any form, so far as I could learn in my recent tour in the district, is not very prevalent now. I could not hear of any case during my residence in the villages.

7. The Sub-division of Brahmenbaria appears to have suffered most; the reason of this is, I fancy, merely because there are more cattle in that part of the district.

Separation.

8. A man at Dandkandi told me he had lost 9 out of 20 of his cattle during the past year in Kartick (October) from *gootee*. He said that he attempted no separation of the diseased from the healthy cattle, and that when they died he threw out their bodies on the maidan, where the *moochees* skinned them and sent the skins for sale to Dacca.

9. At Chando-gow, which adjoins the forests of Hill Tipperah, I heard very little of cattle disease; there the cattle find comparatively good pasture in the forests.

10. In the *Khas Mehal* Dularampoor, where many hundred head of cattle are assembled, I was assured that the disease was unknown. I attribute this to the fact that the ryots are well-to-do and can afford their cattle proper food and shelter.

Exportation.

11. I find I was mistaken in a late report in saying that there is no exportation of cattle from this to other districts. I have since observed considerable herds of cattle *en route* to Chittagong. The owners that I have asked told me that they purchased the animals in the

neighbourhood of the Thorlah Thannah of this district, and were taking them, according to yearly custom, to Chittagong. Cattle, they say, are somewhat dear just now in consequence of the ryots ploughing their land. When the ploughing is finished the market will fall. They did not speak of unusual mortality from cattle disease. NOAKHALLY.

12. To show that cattle are not very dear in this district, one man told me the herd of 90 he was driving to Chittagong had cost him Rs. 750, or on an average Rs. 8-6 a head.

13. *Symptoms. Appearance of the coat.*—Erect. Symptoms.

14. *Whether there are any eruptions on the body or feet, or not.*—In *gootee* eruptions generally appear all over the body, and have the appearance of human small-pox. The cases in which they do not come out are said to be always fatal.

15. *Eyes and mouth watering or not.*—The mouth waters in *batan;* in *gootee* the eyes water.

16. *Body cold or hot.*—Very hot.

17. *Cough or labored breathing.*—None.

18. *Shivering fits or not.*—None, but the animal attacked becomes very restless.

19. *Swelling in the throat or any difficulty in breathing.*—The throat swells only in the disease called *golafula,* and there is difficulty in breathing.

20. *Appearance of urinary or fœcal evacuations.*—Nothing peculiar in urine, but the fœcal evacuations have the appearance of human choleraic evacuations, and emit a very offensive smell.

21. *Average duration of attack before recovery or death.*—Five or six days before death, but in cases of recovery the animal suffers for weeks.

22. *Preventive or remedial measures.*—None; the remedies administered are merely so-called cooling drinks, such as rice-water and the juice of the plantain tree. Remedies.

23. I have at present nothing to add in addition to former reports. I have issued orders with a view to prevent as much as possible cattle which have died from disease being skinned by the *moochees,* and also to urge the necessity of the instant separation of diseased cattle from healthy ones.

24. I may mention that all the persons whom I have asked scout the idea of a general system of cattle poisoning. Poisoning.

DISTRICT OF NOAKHALLY.

Memo. from E. WHINFIELD, Esq., *Officiating Magistrate of Noakhally,*—(*No.* 52, *dated* 21*st February* 1870.) Noakhally.

Begs to forward the accompanying copy under instructions conveyed in Government Circulars Nos. 2777 and 2879, dated 11th and 20th December respectively

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Memo. from BABOO JOGGODISHNATH ROY, *District Superintendent of Police, to the Magistrate of Noakhally,*—(*No.* 948, *dated* 28*th December* 1869).

In reply to his No. 446, dated 22nd ultimo, and Commissioner's No. 301, dated 25th instant, begs to state that cattle disease prevailed largely in the district during the last three or four months; it has considerably abated at present. The symptoms of the disease are about the same. The differences are specified in the replies. The largest amount of loss has occurred in the stations which were submerged in the storm-wave of the 9th May last, namely, Sundeep, Hateah, and Bamnie. The percentage of loss given by the Police is vague and generally somewhat exaggerated. As far as can be gathered from the returns and from personal enquiry, the average loss has not exceeded 10 per cent. in the whole district. The percentage of recovery is about 25 per cent.

The Commissioner's letter, with enclosures, is returned.

Q.—What are the premonitory symptoms of the disease affecting the cattle on the churs at present, and what is it called by the natives?

A.—The disease is generally called *bussunto* or cow-pox. In some places it has been denominated *boropeera* or *foshora* or *khoorapeera.* The premonitory symptoms are, shivering, swollen throat, and hair erect. Name

NOAKHALLY.
Symptoms.

Q.—Is the commencement of the disease attended with shivering fits ?

A.—Yes.

Q.—Is there any increased heat of skin, ears, horns, &c. ?

A.—Yes.

Q.—What is the state of the skin, rough or smooth, are the hairs erect, and are the ears observed to be drooping back ?

A.—Skin rough and erect, and ears drooping.

Q.—With reference to the respiration, is it hurried ?

A.—Respiration hurried.

Q.—Does the animal affected refuse food, and is there absence of rumination ?

A.—Refuses food, gnashes the teeth, and does not ruminate.

Q.—Is the disease attended with intense thirst, or does the animal refuse water ?

A.—Sometimes thirst, and sometimes want of it.

Q.—Are the eyes inflamed and watering ?

A.—Eyes are inflamed and watering.

Q.—Is there any discharge perceptible from the mouth and nostrils, if so, state its appearance ?

A.—White, from mouth and nostrils.

Q.—Is the muzzle dry, and is the animal affected with symptoms of cough ?

A.—Mouth dry, and with cough, sometimes natural.

Q.—What is the state of the tongue, swollen or natural ?

A.—Sometimes the tongue is swollen.

Q.—Are the bowels constipated or relaxed, if so, state the appearance of the evacuations, whether watery and slimy or bloody ?

A.—Bowels sometimes constipated and sometimes relaxed with bloody evacuations.

Q.—Are there any eruptions about the body, if so, state how many days after the first symptoms does it make its appearance ?

A.—In small-pox the eruptions make their appearance on the second or third day.

Q.—Is there any marked alteration about the mouth and throat, and is the latter swollen ?

A.—In cases of *foshora* and *boropeera* the mouth and throat are swollen, the skin coming off from the mouth and tongue.

Q.—How long does the disease last before it proves fatal ? and if recovery takes place, in how many days does it do so ?

A.—The disease lasts in *foshora* two or three days, in *boropeera* four or five days, in cow-pox a fortnight or 20 days.

Memo. from BABOO JOGGODISHNATH ROY, *District Superintendent of Police, to the Magistrate of Noakhally,*—(*No.* 955, *dated* 30*th December* 1869).

In continuation of No. 948, dated 28th instant, and with reference to his remarks on Commissioner's No. 312 of 22nd idem, begs to state that the prevalence of cattle disease has been general throughout the district, being virulent in some and of a milder description in other portions. The names of stations and outposts in which it has appeared are given below. The disease is not supposed to be infectious ; at least it has not been reported as such. Its origin is not known. The places submerged in the storm-wave of 9th May have suffered most, and the rainy season appears to be the time during which the largest loss occurred. With regard to preventive measures, the orders of Government regarding segregation of diseased animals and their burial have been generally promulgated, but no remedial measures, to the best of my knowledge, are availed of, as the people of the district do not seem to be aware of any, and cow-leeches (chiefly *goallas*) are not to be found as in other parts of Bengal.

Storm-wave.

Prevention.

CHITTAGONG.

Information in Form No. 1 *regarding the prevalence of cattle murrain in the District of Noakhally, furnished by* BABOO JOGGODISHNATH ROY, *District Superintendent of Police, dated 29th January* 1870.

Locality. The stations and outposts of Noakhally District where cattle disease has prevailed are Sherdhoram, Ameergong, Bamai, Sundip-Hatia, Moonshihat, Lidhi, Nalchira, Lockhipur, Begumganj, Ramgong, Raipur, and Phorasgong. The diseases are called *bussunto* or cow-pox, *barapira* or *phoshera* or *koorapira*. They prevailed in the rainy season.

Statistics. There are about 6,222 head of cattle in each station, about 50,000 were attacked, about 25 per cent. died, and about 75 per cent. recovered.

These diseases are probably infectious.

Symptoms. The symptoms are,—rough coat; eruptions on the body; eyes and mouth water; body hot; cough; shivering fits; swelling of throat, evacuations bloody.

Phoshera lasts two or three days, *barapira* four or five days, and *bussunto* a fortnight or twenty days.

No remedial measures are resorted to.

DISTRICT OF CHITTAGONG.

Chittagong. *From* A. KING, Esq., *District Superintendent of Police, Chittagong, to the Magistrate of Chittagong,—(No.* 7, *dated 5th January* 1870.)

With reference to your memorandum No. 1417 of the 27th ultimo, with enclosures, and requesting to be furnished with the information required in para. 2 of the Commissioner's memorandum relative to the prevalence of the cattle disease in this district, I now have the honor in reply to report as follows.

Symptoms of *bussunto*. 2. The principal disease to which cattle—cows and buffaloes—are subject in this district is known to the natives as *bussunto* or small-pox, the first symptoms of which are ushered in by fever and a partial loss of appetite, which continue for about 24 hours, when the animal refuses all food, but has great thirst, after which the breath becomes very offensive, and the animal is affected with a constant watery sort of diarrhœa, which is also most offensive; when the evacuations have a mixture of blood, then it would seem all chances of recovery are nil.

3. The pustules are said to appear about the sixth or seventh day, which is looked on as the crisis of the disease, and if an animal survives for a day or two after recovery may be looked forward to.

Remedies. 4. The only remedies used by the people of this district are, to rub the tongue occasionally with pepper, and, when possible, to introduce boiled rice and small portions of ghee into the stomach by forcing the mouth open. It is believed that not more than 25 per cent. of those attacked recover.

5. A large number of buffaloes and cows died in the sub-district of Cox's Bazaar last year, as well as at the opposite or left bank of the Kurnofoolee river. The disease is believed to prevail more during the rainy than any other season. At the present time, and for two or three months past, there have been no reports of any cattle having been attacked.

Season. 6. During the last rainy season, one of the residents here lost two fine cows with this disease, having left them to the care of native servants; both died within five days. Another was then attacked, when the owner determined on trying what effect aconite and belladonna would have, both of which medicines were administered alternately for five days; the result being the disappearance first of the fever, and subsequently of all other inflammatory symptoms. The cow perfectly recovered and since then calved and gave milk as usual.

7. The enclosures of your letter are herewith returned.

No. 59.

Copy forwarded to J. H. B. Hallen, Esq., President of the Commission deputed to enquire into the subject of cattle disease, with reference to the Government letter No. 2777, dated the 11th December 1869, to the address of the Commissioner,

By his obedient servant,

F. COWLEY,

Offg. Joint Magistrate in charge.

CHITTAGONG MAGT.'S OFFICE;
The 21st January 1870.

CHITTAGONG. *From* H. C. B. C. RABAN, Esq., *Officiating Magistrate of Chittagong*,—(*No.* 1329, *dated* 17*th October* 1870.)

I have the honor to report for your information that cattle disease is reported to be prevalent at the villages noted in the margin.

Idulpore. Mohadebpore.	In Seetakund.
Doorgapore. Goriaish. Meetaserra.	In Meerkaserai.

2. The information required with regard to the symptoms of disease, &c., are given below.

2. The disease is called small-pox, বসন্ত.

3. Date of outbreak, 20th September 1870, in Idulpore and Doorgapore, 10th September 1870 in Mohadebpore, and 15th September 1870 in Goriaish and Meetaserra.

4. Cattle attacked, 18 in Idulpore, 50 in Mohadebpore, 3 in Doorgapore, 46 in Goriaish, and 13 in Meetaserra.

5. Of which 14 died in Idulpore, 37 in Mohadebpore, 3 in Doorgapore, 40 in Goriaish, and 13 in Meetaserra.

6. None recovered except 6 in Mohadebpore.

Statistics. 7. Four still ill in Idulpore, 7 in Mohadebpore, and 6 in Goriaish.

8. About 80 cattle in the village Idulpore, 70 in Mohadebpore, 100 in Doorgapore 300 in Goriaish, and 200 in Meetaserra.

9. The disease is infectious.

Origin. 10. How originated, not known.

Symptoms. 11. The following are the symptoms as described by the Police :—

Hairs erect; no eruptions on the body or feet in the Seetakund villages, but eruption is said to mark the disease at Meerkaserai; eyes and mouth watering; body hot; labored breathing; shivering fits; difficulty in breathing; swelling of the throat in the Meerkaserai, but apparently not at Seetakund; urine reddish and fæcal evacuations light.

12. Duration of attack, five or six days.

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BURDWAN DIVISION.

COMPRISING THE DISTRICTS OF BURDWAN, BANCOORAH, BEERBHOOM, HOOGHLY, HOWRAH AND MIDNAPORE.

Index of Records.

[*N. B.*—Papers in Italics are not printed.]

District.	From whom received.	Number.	Date.	Reference and Purport.
Hooghly.	Historical Sketch.	...	.....	Page 159.
	Circulars of the Medical Board.	14	24th Dec. 1834 ... 16th Feb. 1836 ...	Requesting information regarding vaccinia and the small-pox affecting cattle, p. 161.
	S. Ludlow, Esq., Superintending Surgeon, Barrackpore.	271	29th March 1836 ...	Regarding the *matah* or *gootee* of cattle, pages 161 & 162.
	Dr. T. Wise, Civil Assistant Surgeon, Hooghly.	...	12th March 1836 ...	
	R. P. Jenkins, Esq., Commissioner of Burdwan.	141*C*	1*st March* 1866 ...	*Selections, Bengal Government, p.* 126. *States that gootee and puschima prevail every year in Hooghly.*
	C. T. Buckland, Esq. ...	95	9*th March* 1870 ...	*Reports outbreak of cattle disease in village Foolooe.*
	F. H. Pellew, Esq., Magistrate of Hooghly.	83	21*st February* 1870	*Form No.* 1, *relating to same outbreak.*
	Ditto ditto ...	...	15*th March* 1870 ...	
	Ditto ditto ...	113 & 341	9*th and* 26*th March* 1870.	*Reports outbreak at Akna and Dalimba.*
	Ditto ditto ...	286	19*th March* 1870 ...	*Ditto ditto at Pandoogram.*
	Ditto ditto ...	305	22*nd March* 1870...	*Reports disappearance of disease at Foolooe.*
	Ditto ditto ...	332	25*th March* 1870 ...	*Ditto ditto at Pandoogram.*
	Ditto ditto ...	333	*Ditto* ...	*Reports outbreak at Bagdanga.*
	Ditto ditto ...	334	26*th March* 1870 ...	*Ditto ditto at Dengal (Ghoghaut.)*
	Ditto ditto ...	752	15*th July* 1870 ...	*Ditto ditto at Oberampoor (Hurripaul.)*
	Ditto ditto ...	754	18*th July* 1870 ...	*Ditto ditto at Uttermansri, &c., (Khanakool.)*
	Ditto ditto ...	954	9*th September* 1870	*Reports prevalence of bussunto in 8 villages of the Chundeetollah Station, Pergunnah Baha.*
	Ditto ditto ...	990	13*th September* 1870	*Reports outbreak of disease in Serampoor Sub-division.*
	Ditto ditto ...	...	19*th September* 1870	*Reports outbreak of bussunto in Jehanabad.*

Index of Records.

District.	From whom received.	Number.	Date.	Reference and Purport.
Hooghly,—*continued.*	*F. H. Pellew, Esq., Magistrate of Hooghly.*	...	*25th September* 1870	*Further report of disease in Chundeetollah.*
	Ditto ditto ...	1052	*11th October* 1870...	*Reports disappearance of cattle disease from Hurripaul.*
	Ditto ditto ...	1177	*21st November* 1870	*Reports on a case of Gharmoogra at Cheenamore.*
	W. F. Meres, Esq., Officiating Joint Magistrate of Hooghly.	1287	*27th December* 1870	*Reports the occurrence of a case of Jenea Puschima at Chumapore.* [The foregoing reports are given in a tabular summary at p. 163.]
	Village Akna, including evidence of Modoo Soodun Chatterjee, Izardar.	...	9th April 1870 ...	Evidence regarding cattle disease recorded by the Commission on the occasion of their visit to Mugrah in the Hooghly District. p. 164.
	Evidence of Baloregunge villagers.	...	11th April 1870 ...	p. 165.
	Evidence of Jagessur Koloo of Dalimba.	...	13th April 1870 ...	p. 166.
	Evidence of Koylas Chunder Ghose.	...	Ditto ...	p. 167.
	Evidence of Bungshee Ghose	...	Ditto ...	p. 167.
	Evidence of Banessur Khara.	...	Ditto ...	p. 167.
	Evidence of Gopalkristo Banerjee.	...	Ditto ...	p. 168.
	Evidence of Umbicachurn Ghose.	...	Ditto ...	p. 168.
	Evidence of Gobordhone Ghose.	...	Ditto ...	p. 168.
	Evidence of Nuffer Ghose...	...	Ditto ...	p. 169.
	Evidence of Sreenath Ghose	...	Ditto ...	p. 169.
	Evidence of Villagers of Milchee.	...	14th April 1870 ...	p. 169.
	Ditto ditto Joypore ...	...	13th April 1870 ...	p. 169.
	Ditto ditto Bagatty ...	...	Ditto ...	p. 169.
	Ditto ditto Sultanpoor..	...	Ditto ...	p. 169.
	Ditto ditto Bycantpoor..	...	Ditto ...	p. 169.
	Ditto ditto Kochaty ...	...	Ditto ...	p. 169.
	Ditto ditto Durah ...	...	Ditto ...	p. 170.
	Ditto ditto Notoongram.	...	Ditto ...	p. 170.
	Ditto ditto Bashdebpoor	...	Ditto ...	p. 170.
	Evidence of Pormanund Ghose.	...	15th April 1870 ...	p. 170.
	Villagers of Bagdanga near Chandernagore.	...	31st March 1870 ...	p. 170.
	Information furnished by Baboo Joykissen Mookerjee.	...	12th December 1870	A carefully prepared statement in Form No. 4, p. 171.
Burdwan.	*A. Sawers, Esq.* ..	...	*16th December* 1863	*Selections, Bengal Government, p.* 11. *Describes gootee and puschima in the Burdwan District.*
	C. F. Montresor, Esq., Officiating Commissioner of Burdwan.	13	*3rd February* 1864	*Selections, Bengal Government, p.* 13. *Describes the varieties of cattle murrain prevailing in Burdwan.*
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 *C*	*1st November* 1866	*Selections, Bengal Government, p.* 126. *Intimates that no disease has prevailed since* 1864.
	C. T. Buckland, Esq., Officiating Commissioner of Burdwan.	112	*1st March* 1870 ...	*Report the widespread prevalence of go-bussunto in the Burdwan District. The disease had spread widely over the Burdwan, Cutwa, and Bood-Bood Sub-divisions, but had not appeared at Culna.*
	W. E. Ward, Esq., Magistrate of Burdwan.	20 *P*	*19th February* 1870	

District.	From whom received.	Number.	Date.	Reference and purport.	
Burdwan,—*continued.*	*Enclosure Form No.* 1, *with statistics of* 29 *villages.*	...	19*th February* 1870	*The symptoms are carefully described.*	Index of Records.
	W. E. Ward, Esq., Magistrate of Burdwan.	53 *P*	7*th April* 1870 ...	*Further report of disease in Burdwan, Cutwa, and Bood-Bood.*	
	Baboo Protabnarain Singh, Deputy Magistrate of Bood-Bood.	32	25*th April* 1870 ...	*Further report of cattle disease in Bood-Bood Sub-division.*	
	Baboo Chundranarain Singh, Deputy Magistrate of Cutwa.	68	6*th June* 1870 ...	*Reports an outbreak of small-pox at Arjoon Dihi,* 7 *miles south of Cutwa.*	
	W. E. Ward, Esq., Magistrate of Burdwan.	104 *P*	15*th June* 1870 ...	*Directing the Police to make more careful inquiry into cattle disease.*	
	Ditto ditto ...	105 *P*	16*th July* 1870 ...	*Reports outbreak at Nogundihi, Cutwa.*	
	Ditto ditto ...	112 *P*	2*nd July* 1870 ...	*Ditto ditto Fuorgachy, Cutwa.*	
	Ditto ditto ...	123 *P*	22*nd July* 1870 ...	*Statement of mortality up to* 15*th July* 1870.	
	Baboo Chundranarain Singh, Deputy Magistrate of Cutwa.	104	25*th July* 1870 ...	*Reports outbreak of cattle disease in villages Dhona and Guffoolia, Cutwa.*	
	S. Kean, Esq., Officiating Magistrate of Burdwan.	131 *P*	12*th August* 1870...	*Fortnightly report from* 16*th to* 31*st July.*	
	H. F. J. Kean, Esq., Officiating Magistrate of Burdwan.	137 *P*	30*th August* 1870...	*Fortnightly report from* 1*st to* 15*th August.*	
	Ditto ditto ..	151 *P*	28*th September* 1870	*Report of cattle disease in villages Majigram, Shimoola, and Amudpore.*	
	Ditto ditto ...	156 *P*	*Ditto*		
	Ditto ditto ...	156 *P*	15*th October* 1870	*Fortnightly report from* 1*st to* 15*th September.*	
	Ditto ditto ...	157 *P*	*Ditto*	*Fortnightly report from* 16*th to* 30*th September.*	
	Ditto ditto ...	161 *P*	17*th October* 1870...	*Report of cattle disease in village Gobindpore.*	
	Baboo Protabnarain Singh, Deputy Magistrate of Bood-Bood.	90	18*th October* 1870...	*States that murrain does not prevail in his Sub-division.*	
	Baboo Chundranarain Singh, Deputy Magistrate of Cutwa.	149	*Ditto*	*Ditto ditto ditto.*	
	H. F. J. Kean, Esq., Officiating Magistrate of Burdwan.	189 *P*	20*th October* 1870...	*Reports disease in villages Borshole and Kuorha.*	
	Ditto ditto ...	182 *P*	22*nd October* 1870...	*Reports disease in village Shunkur.*	
	C. D. Field, Esq., Officiating Magistrate of Burdwan.	192 *P*	4*th November* 1870	*Reports that disease has ceased in Amudpore, and that an hospital cannot be established there.*	
	Officiating Magistrate of Burdwan.	197 *P*	8*th November* 1870	*Fortnightly report from* 16*th to* 30*th October* 1870.	
	Ditto ditto ...	206 *P*	12*th November* 1870	*Forwarding Police memorandum No.* 87, *stating the increase of cattle disease in* 4 *villages.*	
	Baboo Protabnarain Singh, Deputy Magistrate of Bood-Bood.	101	16*th November* 1870	*Reports prevalence of cow-pox in Barkhona village and suggests opening an hospital.*	
	Officiating Magistrate of Burdwan.	214 *P*	18*th November* 1870	*Fortnightly report from* 1*st to* 15*th November* 1870.	
	Ditto ditto ...	224 *P*	...	*Forwards a Police letter reporting the disappearance of cattle disease mentioned in p* 206 *of* 12*th November* 1870, *and reporting fresh outbreaks.*	

Index of Records.

District.	From whom received.	Number.	Date.	Reference and purport.
Burdwan,—*concluded.*	*Officiating Magistrate of Burdwan*	226 *P*	*6th December* 1870	*Fortnightly report from 16th to 30th November* 1870.
	Ditto ditto ...	237 *P*	*21st December* 1870	*Fortnightly report from 1st to 15th December.*
	Ditto ditto ...	240 *P*	*26th December* 1870	*Reports disease in Ramnugger, Jhama and Gungooria villages.*
	Ditto ditto ...	239 *P* ...	*28th December* 1870	*Reports disease in Culna, and gives the number of deaths which occurred.*
				[The information contained in the foregoing reports is given in the summary table at p. 175.]
	Evidence of villagers of Taleet.	...	16th April 1870 ...	Evidence recorded by the Commission at the several villages in the neighbourhood of Burdwan visited by them. p. 177
	Ditto of Katgora ...	..	17th April 1870 ...	p. 178
	Ditto of Palla Pooker. ...	...	18th April 1870 ..	p. 179
	Ditto of Gangpoor and Bam.	...	19th April 1870 ...	p. 180
	Ditto of Mirzapore and Kamnara.	...	20th April 1870 ...	p. 181
	Ditto of Issur Chunder Gangooly of Kalekote, Bood-Bood.	...	19th April 1870 ...	Evidence recorded by the Commission on the occasion of their visit to Bood-Bood and some of the surrounding villages. p. 181
	Ditto of villagers of Beershinnie.	...	20th April 1870 ...	p. 182
	Ditto of Dakhan Khara. ...	...	Ditto ...	p. 183
	Ditto of Bood-Bood ...	...	Ditto ...	p. 183
	Ditto of Dignugger ...	...	Ditto ...	p. 184
	Ditto of Racona ...	...	21st April 1870 ...	p. 185
	Ditto of Noboy Bhuttacharjee of Gor.	...	Ditto ...	p. 186
	Ditto of Jodunath Roy and Sham Churn Roy of Putney.	...	Ditto ...	p. 186
	Ditto of Lall Behary Roy of Satnundee.	...	Ditto ...	p. 187
	Ditto of Inayut Oollah and Dyrustoolah of Amor	...	Ditto ...	p. 187
	Ditto of Ramjewan Roy of Musnopore.	...	Ditto ...	p. 187
	Ditto of Woollayut Hossein of Keera.	...	Ditto ...	p. 187
	Ditto of Bama Churn Dutt of Amorpore.	...	Ditto ...	p. 188
	Ditto of Jadobundo Mozoomdar of Dooarmurree.	...	Ditto ...	p. 188
	Ditto of Ketoo Moochie of Bood-Bood.	...	Ditto ...	p. 188
Howrah.	*J. Stalkartt, Esq.* ...	...	*12th January* 1864.	*Selections, Bengal Government, p.* 17. *Gives particulars of gootee in the Howrah District.*
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 *C*	*1st November* 1866	*Selections, Bengal Government, p.* 126. *States that cattle disease has not prevailed to any extent in Howrah.*

District.	From whom received.	Number.	Date.	Reference and purport.
Midnapore.	*C. F. Montresor, Esq., Commissioner of Burdwan.*	13	*3rd February* 1864	*Selections, Bengal Government, p.* 13. *Cattle disease said to be very common in the district.*
	J. W. Terry, Esq. ...	...	*25th January* 1864	*Selections, Bengal Government, p.* 16. *Gives particulars of gootee and homsa.*
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 *C*	1*st November* 1866	*Selections, Bengal Government, p.* 126. *States that cattle disease has been severe in the Bishanpore Pergunnah.*
	Commission's visit to Woolooberia.	...	6th March 1870 ...	An inspection of the cattle market, p. 188.
	J. R. Hallet, Esq., Joint Magistrate, Midnapore.	215	28*th July* 1870 ...	*States that no disease exists at Jallamoote.*
	J. R. Hallet, Esq., Joint Magistrate, Midnapore.	214	Ditto ...	Gives particulars in Form No. 1 of a severe outbreak of cattle disease in Tumlook, p. 190.
	Baboo Juggeshur Mookerjee, Deputy Magistrate of Tumlook.	*D. O.*	4*th August* 1870 ...	*Describing route to affected villages.*
	Ditto ditto	111	26*th October* 1870...	*States that there is no murrain prevailing in Tumlook.*
Bancoorah.	*C. F. Montresor, Esq., Commissioner of Burdwan.*	13	3*rd February* 1864	*Selections, Bengal Government, p.* 13. *Reports that four years ago cattle disease was violent in Bancoorah.*
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 *C*	1*st November* 1866	*Selections, Bengal Government, p.* 126. *Stating that no disease has prevailed since* 1864.
	E. J. Roberts, Esq., Civil Medical Officer, Raneegunge.	...	29*th May* 1866 ...	*Selections, Bengal Government, p.* 111. *Gives a description of gootee, and states that the neighbourhood has been free from it for many years.*
	J. P. Grant, Esq., Magistrate of Bancoorah.	18	6th January 1870	Reports of cattle disease in the village of Jamjoory, p. 190.
	V. Richards, Esq., Medical Officer, Bancoorah.	...	2nd January 1870	
	C. F. Buckland, Esq., Officiating Commissioner of Burdwan.	312	28th July 1870 ..	Forwards a carefully prepared statement in Form No. 1, showing the prevalence of cattle disease in the district, p. 191.
	A. C. Wright, Esq., Magistrate of Burdwan.	*D. O.* 1261	*25th October* 1870 *8th December* 1870...	*Reports that no disease prevails.* *Reports disease in Gungajeelghatee Thannah in Bancoorah District.*
Beerbhoom.	*C. F. Montresor, Esq., Commissioner of Burdwan.*	13	3*rd February* 1864	*Selections, Bengal Government, p.* 13. *States that cattle disease existed during the Sonthal insurrection and in* 1864.
	R. P. Jenkins, Esq., Officiating Commissioner of Burdwan.	141 *C*	1*st November* 1866	*Selections, Bengal Government, p.* 126. *Reports that cattle disease has been prevailing for the last two years.*
	D. J. McNeile, Esq., Magistrate of Beerbhoom.	123 P	18th January 1870	States that *bussunto* and *khoorah* prevail in the south-eastern part of the district, p. 192.

Index of Records.

HISTORICAL SKETCH.

Prior to the year 1864 cattle disease did not excite any attention in this Division, and no records of outbreaks exist, with the exception of a report on

1836. *matah* or *gootee* forwarded in 1836 to the Medical Board at Calcutta by Dr. T. Wise, Civil Assistant Surgeon of Hooghly. This report was elicited by circulars issued by the Medical Board in 1834 and 1836, the first desiring information as to the existence of natural vaccinia in India, and the second regarding the "small-pox" among cattle, to which, in the interval, the attention of the Board had been directed. These circulars, which are of considerable historical interest, are printed in the appendix, and the replies to them from other stations will be alluded to in the proper place. These have been transcribed, by the permission of the Inspector General of Hospitals, from the valuable records of the Bengal Medical Department.

The Districts of Hooghly and Burdwan were visited by the Commission in April 1870, and the oral testimony obtained was to the effect that the disease called *gootee* or *bussunto* (rinderpest) has prevailed from time immemorial, and breaks out in particular places at frequent intervals. This is, no doubt, true of all the districts, and it is doubtful that in any year the whole of any district is free from this disease or from *khoorah* (foot and mouth disease). The Commissioner of Burdwan, C. F. Montresor, Esq., writing in February 1864, states that "all the districts of this Division have suffered more or less from this disease." In Beerbhoom it was prevalent during the Sonthal insurrection (1855), and existed in some places at the time the letter was written. In Bancoorah it had been virulent four years previously; in Burdwan had been known for 20 or 30 years; in Midnapore was reported to be a very common disease; in Howrah broke out every three or four years, and in a subsequent letter, dated 1st November 1866, the Commissioner (R. P. Jenkins, Esq.,) on the authority of Baboo Joykissen Mookerjee, an influential zemindar, states that *gootee* is very well known in the district, and appears every year at the commencement of the hot weather. One reporter, Mr. Sawers, avers that the natives of Culna assert that the disease was introduced from the North-West by the bullocks of cartmen, 25 or 30 years ago, and was then (December 1863) a resident and established epidemic of the district. The inquiries of the Commission would go to show that this belief is unfounded, and that no date can be assigned to the importation of murrain into Burdwan; and this is probably true of every other district in India, though there is a universal tendency in the people of one district to ascribe the origin of cattle disease to some other. Statements that the disease originally came from the north, south, east, and west are exceedingly common.

Written records of particular outbreaks are as follows, oral testimony being disregarded as vague:—

Cattle disease is said to have been very virulent in Bancoorah, but the

1860. particular localities affected are not mentioned.

Disease is said to have prevailed in the Sub-

1862. division of Culna virulently in 1862 and in a milder

1863. form in 1863. Mr. Stalkartt gives instances of its prevalence at Howrah and in the neighbourhood of Calcutta in both these years.

All the districts of the Division are said to have suffered more or less

1864. in 1864; but in Beerbhoom disease prevailed in the

1865. Pergunnahs Nuggur, Shacooleepore, and Mouressur.

1866. *Gootee* is said to have prevailed in this district during the years 1865-66, and the mortality of the disease is put down at 4,500.

HISTORICAL SKETCH.

The particular localities visited are not mentioned. Disease also prevailed in the Sub-division of Gurbettah, Midnapore District, in the latter year. In
1867. a report dated 6th January 1870, the Magistrate
1868. of Bancoorah states that the disease has existed in a mild form during the last three years.

Towards the end of 1869, however, this district appears to have been visited severely, and the outbreak which com-
1869. menced then continued to prevail widely during
1870. the first seven months of 1870. A detailed statement was called for from each Thannah in the district, which showed that only three of twelve police stations gave a clean bill of health. In the remaining nine, a considerable mortality had occurred up to the month of July 1870, giving a total of 11,015 deaths for the district. The principal cause of this mortality was *bussunto* (rinderpest), but *khoorah* (foot and mouth disease) and others prevailed simultaneously.

Similarly, in the District of Burdwan a very general outbreak of murrain made its appearance in November and December 1869, prevailing over the Sub-divisions of Burdwan, Bood-Bood, and Cutwa. This seems to have become intensified, and spread during the first six months of the year ; and though in July the disease had greatly abated, and in most of the villages where it had prevailed altogether subsided, it continued to prevail here and there in different places, and as the rains cleared off came to be heard of more frequently.

In Hooghly also rinderpest prevailed very extensively. Reports were received at intervals from January to September, showing that the disease prevailed in several villages of the following police stations, *viz.*, Goghaut, Bashbarea, Biddyabatty, Hurripal, Khanakool, Chundeetollah, and Jehanabad.

In Midnapore a severe outbreak of disease occurred in June and July in the Sub-division of Tumlook, but the remaining portions of the district seem to have remained unaffected. From Beerbhoom a report was received in January, stating that *bussunto* and *khoorah* prevailed in the south-eastern parts of the district, but nowhere else.

Towards the close of the year reports of murrain from the Burdwan District became more frequent. The disease prevailed to a small extent, and in a scattered way, in the Bood-Bood Sub-division, more severely in the Gangooria and Munglecote stations, south and north of Burdwan; and latterly an hospital for treatment was opened in the town of Culna, east of Burdwan, where numerous cases were obtained from the town and neighbouring villages. The Tumlook outbreak was reported on the 26th of October to have disappeared. In Hooghly, reports were received in November of the prevalence of disease at Cheenamore, but the cases were scattered and few.

Bancoorah and Beerbhoom appear to have continued free of plague throughout the rest of the year, no reports having been received subsequent to those above referred to.

Extracts from the Records of the Bengal Medical Department.

Circular from—J. HUTCHINSON, Esq., *Secretary, Medical Board, to the Superintending Surgeons of Divisions,—dated 24th December* 1834.

No. 14 Circular, to the Superintending Surgeons of Divisions.

I am directed by the Medical Board to transmit to you, for the information of medical staff serving within your division, the annexed extracts from a despatch from Government in the General Department, dated the 1st instant, and from the Hon'ble the Court of Directors, dated the 4th of June last.

2. The Board desire me at the same time to append copies of their circular letter No. 123 of the 3rd June 1832, to the address of Superintendents of Vaccination, and of their letter to the address of the Superintendent of Vaccination at Patna, under date the 7th of September of that year.

3. With reference to these documents, the Board have now to request that you will call on all medical officers within your circle, but more especially on those in charge of vaccine depôts, to make the fullest inquiry into the existence of variolous disease among the cattle in this country, requesting them at the same time, if they have reason to believe that it does exist, to describe the appearances and habits of the disease at the greatest length.

4. Should there be any depôt for breeding cattle within your circle, you will in like manner call on the Superintendent and the Veterinary Surgeon in charge to furnish you with every information on the subject which it may be in their power to give.

5. The Board is likewise desirous that the Superintendents and the Veterinary Surgeons attached to the several Stud Establishments for the breeding of horses should be applied to, to report if "grease" be a common disease among the horses in this country; but more especially in regard to that affection which in some measure resembles it, and which is called by Farriers "scratchy heel;" whether they have reason to believe that either the one or the other has any affinity to variola, or if inoculation with the virus of either is entitled to be considered a prophylactic against the occurrence of small-pox.

6. The Board appreciate highly the advantage that would accrue from the discovery of an indigenous source of vaccine virus, and have hazarded the above suggestions with a view to awaken or to invite generally such research on the subject as they are sure medical officers are not only able, but will be found willing to institute.

7. The Board are of opinion that, so far as Superintending Surgeons of Divisions and Superintendents of Vaccination are concerned, the information herein required may with propriety be embodied in their replies to the Board's Circular No. 872, of date the 4th of March of the present year.

Circular from—J. HUTCHINSON, Esq., *Secretary, Medical Board, to the Superintending Surgeons of Divisions, dated 16th February* 1836.

I am directed by the Medical Board to request that you will recall the attention of the medical officers and other public functionaries concerned, within the ——— Circle of Superintendence, to the subject of the Board's Circular letter No. 863, dated the 24th of December 1834, a copy of which communication is hereunto annexed for facility of reference.

It seems to be no longer doubtful that a disease called by the Natives *matah* or *gootee* does prevail among the cattle in this country, but it is characterised by symptoms of such severity, and is otherwise so unlike the vaccine disease described by Jenner and others as prevailing in some of the counties of England, that the Board have very great doubts of its identity.

Other circumstances have led the Board to doubt whether a variolous disease as well as a vaccine disease may not prevail among the cattle of this country, and accordingly any information on this point, in addition to that adverted to in the Board's circular above specified, would be highly appreciated.

The present subject is one in which the Board take a lively interest, and they look to medical officers accordingly with confidence for their zealous co-operation in conducting the inquiry.

From—S. LUDLOW, Esq., *Superintending Surgeon, to Secretary, Medical Board,—No.* 271, *dated 29th March* 1836.

I do myself the honor of forwarding, for the perusal of the Medical Board, a letter from Dr. Wise, of Hooghly, on the subject of the *matah* or *gootee* eruption which prevails amongst the cattle in this country.

CIRCULARS OF MEDICAL BOARD.

I presume that Dr. Wise's report will be considered a valuable one by the Board, as he is an experienced and observant vaccinator, and, I may venture to add, his conclusions seem to be advanced with much judgment and caution. He has gone a great way in establishing the fact that cows are subject to the most fatal effects of variolous epidemic as well as man, and that variola and vaccinia are modifications of the same disease, or perhaps by accident or transmission they may be, all three, modifications one of another. The evidence of variola being equally fatal in this country to the cow as to the human species, that is, in its epidemic or concentrated form, sets at naught the opinion of many writers in Europe on the same subject, who consider the constitution of the cow as possessing an innate power of resisting the specific effects of inoculation with small-pox matter, in so far as it has only produced a temporary spot of inflammation.

We find then in India, where variola is generally malignant, when in an epidemic form, that its subtile contagion is not alone hostile to man, and that it is not always so changed by the special constitution of the cow as to become a protective means against small-pox in the human species.

In Europe, the lower animals have seldom, of late years, been exposed to infection by variolous exhalations, but in this country it is not so, and therefore inoculation from the cow in seasons of epidemics must be dangerous and not recommendable at unfavorable times of the year.

I am in daily expectation of receiving answers from Mr. Brown at Sylhet and Messrs. Lamb and McPherson at Dacca and Moorshedabad, as I communicated the Medical Board's instructions to those gentlemen as well as many others at the latter end of last month. These reports will be forwarded as soon as received, as I wish to collect them all together, so as to make one report on the whole.

DISTRICT OF HOOGHLY.

Hooghly.

From—T. WISE, Esq., *Civil Assistant Surgeon, Hooghly, to the Superintending Surgeon, Barrackpore,—dated 29th March* 1836.

In reply to your favor of the 25th February, I have the honor to offer the following remarks on the nature and properties of the variolous and vaccine disease as they appear among the cattle in this district.

2. The variolous disease presents the following peculiarities:—

Season.

1*st.*—It appears at regular periods, but most commonly in the months of March and April, when the Natives inoculate their children and the small-pox prevails.

Symptoms.

2*nd.*—The cow is first noticed to become languid and lose its appetite; the skin feels hot, and a discharge of saliva falls from the mouth and nostrils, often of a red colour. The fever and affection of the mucous membranes increase for some days; an eruption appears, first in the form of small pimples on the head, and then over the body, followed by diarrhœa and emaciation. The swelling of the mouth and nose increases and extends down the throat, and the eruption terminates in extensive sores, so that the cow can no longer swallow, and in this manner dies.

Infectiousness.

3*rd.*—The disease spreads by infection, and is propagated through the air and by fomites.

Mortality.

4*th.*—In some cases 50 and often 70 per cent. and upwards of the cattle attacked die in these fatal epizootics.

Eruption.

5*th.*—At the bottom of each pock there is a slough of the cutis, and a pit or depression is usually left in the part.

Second attack.

6*th.*—It only occurs once in the same individual.

Comparison with variola.

3. In this disease of cattle we have the same epidemic nature as in small-pox, the same precursory symptoms and pustular eruption of the skin and mucous membranes, the same infectious nature and contagious properties of the morbid secretion, the same severe inflammation of the mucous membrane of the mouth from the contact of atmospherical air charged with virus, and afterwards the effects of its extension along the intestines, the same pits in the skin in cases of recovery, and the same fatal nature of the disease.

Question of identity.

4. As to whether or not this disease of the cow be the same as that from which Jenner obtained his lymph is a point of great difficulty, and requires a proportionate degree of caution in drawing conclusions. Before deciding on this important question, it is necessary to recollect that epidemics differ in violence and fatality in different periods of their course, and in considering therefore the identity of particular diseases, these peculiarities should not be forgotten; certainly, regenerated lymph from the cow affected with the above disease, as successfully practised by Dr. MacPherson, is a convincing proof of both being varieties of the same disease. A boy was sent up to this station from Calcutta vaccinated with this regenerated lymph, which passed through many individuals, presenting the characteristic appear-

ances of vaccination without any unusual symptoms beyond that of, in some cases, a severer accession of fever than usual. In one case the sore did not heal up for a month after vaccination, and the operation required to be repeated to secure the infant from the natural small-pox.

Conclusion.

5. From my individual experience, I am led to believe that the variola and vaccinia in this country are modifications of the same disease produced from unknown causes, in the same manner as inoculation by variolous matter produces in some cases varicella, and cases of this disease appear in certain individuals in variolous epidemics.

The milder disease, in this view of the subject, is produced by its passing through the human system, and still more so when obtained in favourable opportunities from the cow.

Summary of Reports concerning the prevalence of Bussunto received from the Hooghly Magistracy.

Pergunnah or Sub-division.	Thannah.	Village.	Date of outbreak.	Date of return.	No. of cattle in locality.	No. attacked.	No. died.	No. recovered.	Remarks as to symptoms, treatment, &c.
Sub-division Jehanabad.	Goghaut ...	Foolooe ...	.....	21st Feby. 1870	500	23	17	6	The disease is stated to be infectious and to spread from village to village. The symptoms assigned are those usually put down for *bussunto*. The duration of the disease is stated to be 3 or 4 days. Native medicines are said to have been employed, but with little success. Preventive measures were taken, but their nature and result are not stated. The ratio per cent. of stock attacked was 2·1, and died 1·4. The ratio per cent. of attacked which died was 66·1, and recovered 33·9. This statement has been prepared more to show the distribution of the disease than for a statistical purpose. The figures representing stock are more or less conjectural, and the death-rate seems too high, but not very improbably so.
	Bashbarea ...	Akna, Dalimba.	25th Feby. ...	9th March ...	520	144	33	111	
	Goghaut ...	Pandoogram...	3rd March ...	19th ,, ...	...	28	26	2	
	,, ...	Dengul ...	.....	26th ,, ...	150	82	70	12	
Pergunnah Balea.	Chundeetollah	Bhadooah ...	2nd May 1870 ..	9th Sept. 1870	90	52	44	8	
,, ...	,, ...	Mollar Chuck	11th July ...	,, ...	60	2	2	...	
,, ...	,, ...	Jullamadooah	,, ...	,, ...	100	35	28	7	
,, ...	,, ...	Suntesbatty...	,, ...	,, ...	50	27	24	3	
,, ...	,, ...	Kanyedanga...	,, ...	,, ...	200	108	96	12	
,, ...	,, ...	Bhogobuttypore.	,, ...	,, ...	200	104	94	10	
,, ...	,, ...	Singgore ...	,, ...	,, ...	150	5	3	2	
,, ...	,, ...	Allipore ...	,, ...	,, ...	125	3	3	...	
,, ...	,, ...	Nowabkhow...	,, ...	,, ...	500	8	6	2	
,, ...	,, ...	Bagatee ...	,, ...	,, ...	50	11	9	2	
,, ...	,, ...	Hurreepore ...	,, ...	,, ...	200	34	22	12	
,, ...	,, ...	Radhabullubpore.	,, ...	,, ...	100	14	12	2	
,, ...	,, ...	Ichuposur ...	,, ...	,, ...	200	16	12	4	
,, ...	,, ...	Nyshola ...	,, ...	,, ...	100	8	7	1	
,, ...	,, ...	Bajasholu ...	,, ...	,, ...	90	8	6	2	
,, ...	,, ...	Munitpore ...	8th Aug. 1870	,, ...	60	8	7	1	
,, ...	,, ...	Doodcoora ...	,, ...	,, ...	50	17	9	8	
,, ...	,, ...	Mamoodpore	,, ...	,, ...	50	16	8	8	
Sub-division Jehanabad.	Khanakool ...	Nohin Chuck	30th June, 1st July, and 20th Aug. 1870.	19th Sept. 1870	1,200	305	162	143	
		Shoobul Chuck							
		Kakoe							
		Uttermansree							
		Etarae and Patarool.							
				TOTAL ...	4,745	1,058	700	358	
						28	26	2	
						1,030	674	356	

HOOGHLY.

Village Akna, visited 9th April 1870.

Case. Bullock; 8 years old; 11 days ill; has running from eyes, nose, and mouth; coat staring; off feed for 11 days; has great thirst; purging watery and slimy stools, mixed with blood. Blood comes out of nostrils now and then; has an eruption inside the thighs; there are excoriations of gums, now in process of healing; the animal is evidently recovering, and will recover, provided it gets wholesome food. The owner, Bungshee Ghose, says that he has lost 14 head of cattle during the last 4 months. Disease commenced in Magh (January) last; had 20 head of cattle; six are living now; the whole of the herd had the disease. Has been in the habit of giving rice-water, grass, and straw chopped up; gives tepid water. Cowshed inspected and found to be neat and clean. It is made of mud walls and thatched with rice straw.

Treatment.

Cowsheds.

Evidence of MODHOO SOODEN CHATTERJEE.

Statistics. I am an inhabitant of Dalimba, 58 years old, and was born at Dalimba. I am izardar of the village. There are about 250 families who owned nearly 450 head of cattle, 300 being cows and the rest bullocks. At the present moment there are only 150 head of cattle, the remainder died of *bussunto* during the months of November, December, January, February, and March last. The disease though on the decrease still exists, and 5 or 6 are still ill. Twenty-five years ago there was disease in this village, and even then 25 or 30 head died. Before that time the disease *gootee* was not known. When *bussunto* appeared 25 years ago people considered it to be new disease. The disease appeared in the village of Dalimba first in the house of Mohesh Khara. I cannot tell how the disease originated. I am aware that in November last the carters brought some new bullocks from Pagree, Bagay, and Goorpore. The two former villages are 5 miles off Dalimba, where *gootee* raged in 1276 Bengalee (last year) in the months of June and July. It may be that cattle from Pagree and Bagay brought the disease to Dalimba. The disease is notoriously contagious. I am well aware that people of my village did buy cattle from villages affected formerly, and many had the idea that the disease was brought in by these newly bought bullocks. The carters live in the neighbourhood of Mohesh Khara's house. I also think that the carters go to the affected village with their carts and bullocks and bring with them the disease to their village. The carters lost their cattle in Falgoon (February) last. The milkmen are also in the habit of exchanging their cows with the cows of other villages, and it is a well known fact that their cows graze near highways and the railways, where the carters of different places pass and repass, and it is possible that the former got the disease from these cart bullocks. I am of opinion that, in consequence of this disease, lands will be fallow this year, and I think it will be difficult to find men to take the tenures on *bhaug jumma hât*, yet it is customary here to hire bullocks and ploughs for tilling lands; the rate of hire has increased four times. More people hire bullocks and ploughs now-a-days than before. In the village of Dalimba the number of cattle has increased ten times. The people are in the habit of selling cattle to the *beparees*. Both Hindoos and Mahomedans sell in this way. They are taken to Hooghly and Chinsurah for slaughtering purposes. The pasture land has become less than before. This is owing to the increase of cultivation. The lands yield very much less crops than before. This is owing to the rains being less than they were. It is not owing to the absence of inundation. The tanks and ponds of the village are drying up every day, and consequently the means of irrigation are becoming scarce. There are no wells in our village. When *gootee* breaks out the house is fumigated with *dhoona*, and the men try to drench with *conjee* and soft food and *kulai* water. There is no segregation owing to want of accommodation. People do segregate if there is a place for the purpose. I think people would gladly take their cattle to the hospital if one is established at a convenient distance. I think separation should be made when *gootee* breaks out. The moochees take the hides of cattle that die of the disease and sell to the *pikars* of Trebanie and other places; there is no *bhagaria jumma* in my village. The cow that fetched Rs. 88 10 years ago is now to be had for Rs. 25. This increase in the price prevents the ryots from buying cattle so easily as they used to do before. Ryots, when necessary, borrow money from the *mahajun* at a monthly interest of 2 pice to the rupee, sometimes even 4 pice. There are a greater number of cultivators now than before. The agriculturists are better off now than before in my village; the cattle are become fewer in number in consequence of the butchers purchasing a large number. The price of milk and ghee has risen, consequently the value of cows has increased. Another cause is, that the price of produce has increased. Paddy is the chief produce; *amun* being more abundantly cultivated than *aoos*.

Source of disease.

Carters.

Contagiousness.

Milkmen exchange cattle.

Effect on agriculture.

Hiring bullocks.

Cattle sold to beparees.

Destination

Pasture land.

Land less productive.

Tanks and ponds drying up.

Treatment.

Segregation.

Hides.

Price of cattle.

Interest paid to mahajuns.

Cultivation.

Village Baloregunge, visited 11*th April* 1870, 5-30 *p. m.*

A bullock, 14 years old, sick 5 days; symptoms,—viscid discharge from the nose, and bad discharge from the mouth and eyes; coat staring; off feed; had some *conjee* to-day; excoriation of gums and aphthous deposit; tongue very much furred; buccal membrane congested; very weak; medicine,—astringent drench, *conjee* and green grass. Case.

The owner, Gorai Mundle, says that he had 17 head of cattle, lost 6 of *gootee*, 11 are left; 4 had not the disease. The disease commenced in his house 12 or 14 days ago. The disease appeared first in the house of one Soojooddy; the disease then gradually spread. (Gorai Mundle's house is close by; his cattle thus got the illness, which came to his house from Soojooddy's.) Two weeks ago the disease appeared in this village. About 40 head of cattle have died. There is no one who keeps an account of the casualties. The village watchman keeps an account of the deaths of men. Twenty-five years ago there was disease in this village. Never heard before then of disease breaking out; they had the disease *gootee* or *bussunto* before the last outbreak, but not in a very severe form. There has been no *gootee* in the interval that passed between the last outbreak and the recent murrain. The mortality is even greater now than in the outbreak that occurred 25 years ago. The village Akna was attacked first in November last, and the cattle of this place got the disease from the cattle of Akna. The cattle of both these villages graze in one and the same field. The owner states that whenever *bussunto* breaks out he gets cow doctors to give medicine, and they do give medicines, but what medicines are given he does not know. Another man who was present said that *gootee* had no medicine. Twenty-five years ago the disease broke out in a similar form and in a similar way as it did on this occasion. It came from a neighbouring village which was affected, and the villagers believe that the disease is contracted by contagion from other cattle; but on being questioned as to its breaking out spontaneously, they state their belief that it may break out of itself in any village. The villagers do not separate their healthy cattle from the sick, simply because they have no place to do so, and when disease breaks out in the village, their friends and relatives do not allow them to take their cattle there for fear of their catching the disease. They will be glad to send their sick cattle to any proper place, if such a place is made for them. The trial of segregation has not been made for them; therefore the villagers are not sure of the good results, but they think that separation of sick from the healthy will lead to good results. They think that the infection can be carried by the air. They do not know what amount of distance by separation would prevent the cattle contracting the disease by infection.

Statistics. Source of disease. Deaths. History. Disease came from Akna in November 1869. Treatment. Infection. *Gootee* may break out spontaneously. Segregation not practised. Why.

The moochee who is present says that the hides he gets are given to Keenoo Mussulman of Manand. Keenoo takes the hides to Calcutta; does not take any advance from Keenoo. Sells hides from 12 to 14 annas a piece; does not cure the hides. Gets one rupee for the best hide; charges 14 annas for *dagi* hides. Sells 12 hides monthly now, but before the disease sold only 2 or 3 skins. Hides.

Statement of the villagers, continued.

Five or six head of bullocks are annually carried away by the *Pikars* living on the other side of the river; these men buy for agricultural purposes. Do not frequent any markets for cattle. Strike private bargains sometimes in their own village and sometimes in the neighbouring villages. There is a *kutcha* road passing by our village, but the *Pikars* do not drive their cattle over that road. They, however, drive herds of cattle over the main road that goes to Calcutta. The *Pikars* bring the cattle from the Burdwan side. There were more cattle in the village formerly than now. The villagers buy and sell at the Mugrah market occasionally, but generally they go to their own village markets. They do not go to any other market. The Mugrah shop-keepers come to this village haut for selling. There is a daily bazar at Mugrah; no haut. All their dealings are carried on at Mugrah Bazar, their own village market, and in the neighbouring villages. There are no buffaloes here. Have not seen any *gootee* amongst sheep and goats. There are more bullocks than cows. This is a Mussulman village. Cows constitute about quarter of the whole stock, and the rest are bullocks. Rice is the main crop. All the lands will not be cultivated for want of a sufficient number of cattle. Do not know of any instance of the land ever lying fallow for want of cattle. Know that cattle get *puschima*. Cattle purge; throats swell; there is boven, which disappears on the cattle purging. There is no particular cure for *puschima*; it is very rare and kills one or two animals only; the affected cattle die in one or two days. *Puschima* is not infectious. Know that cattle get *aishoo*. It is infectious. It is not fatal. They get the disease almost every year. In last Kartick (October) *aishoo* attacked a good many cattle in this village.

Pikars come and purchase cattle. Buying. Droves of cattle. Markets. Sheep and goats. Effects on agriculture *Puschima*. *Symptoms*. Not infectious. *Aishoo*.

Symptoms of gootee.—Off feed; pass mucus and blood; thirst; running from eyes, nose, and mouth; sore mouth; the breath is very offensive; in some cases there are eruptions on the body. Have seen eruptions on teats and udder; these are reddish. The affected cattle die in 5 or 7 days, after which time they show signs of recovery. Give green grass, tepid water, and oil-cake, but generally cattle refuse food; give boiled rice also; 5 or 6 in a hundred survive in *gootee* cases; 50 or 60 head of cattle had the attack, and only 3 or 4 survived. In December

Gootee. Symptoms. Duration. Treatment. Mortality.

HOOGHLY.

Source of disease.

(Pous) last, the disease *gootee* was bad in village Cashshora, and the people of Baloregunge used to go there, but not their cattle. Akna, which is 6 miles distant from Cashshora, got the disease soon after. There are 5 or 6 villages between this village and Cashshora, but the people here cannot say whether there has been any disease in any of these villages. The

Bulls.

people are very much afraid of this disease. The Akna carts come to this village, and those of this village go to Akna. Brahmini bulls are scarce now, inasmuch as the Calcutta people take them away. The Hindoos have their bulls, for which no fee is charged. They castrate the bulls between the age of one or two years. The testicles are removed.

Baloregunge, 12th April 1870.

Case.

Case No. 1.—Young cow; fifth day eats little; trembling; discharge from eyes; mouth hot; tongue a little furred; vagina congested.

Case.

No. 2.—White bullock, full grown; seven days ill; discharge from eyes, nose, and mouth; aphthous spots on lower gum; has purged for 3 or 4 days, but the purging is stopped now; respiration laboured; off feed; breath offensive; stools soft; no skin eruption.

Case.

No. 3.—Old bullock; 5 days ill; feeding; tongue a little furred, and buccal membrane a little congested; bowels slightly relaxed.

Case.

No. 4.—Bullock, full grown; mouth very healthy; 3 days ill; feeding a little; purged from the first; clay coloured motions.

Cow-houses.

Cow-houses.—Soft clay walls slightly raised; not well ventilated; 3 small windows and one door; clean and neat; clay floor. Owner of Nos. 2, 3, and 4 has 5 bullocks and 2 cows. No death; no other affected.

Nos. 2 and 3 had carbolic acid, two drachms each.

No. 4 had two ounces of hyposulphite of soda.

Case.

No. 5.—Large bullock; 3 days ill; buccal membrane all right; no offensive breath; patches of congestion on gums, which are tumid; slight excoriations; discharges from eyes; œdema of eyelids; no eruption, nor diarrhœa; eats a little; to have, two ounces hyposulphite of soda.

Case.

No. 6.—Bullock, full grown; 6 days ill; discharge from eyes, nose, and mouth; coat staring; lying down; nose extended; excoriation and aphthous deposit on gum; buccal membrane very much congested; aphthous deposit round orifices of sublingual ducts; tongue furred; breath offensive; borders of lips very much congested; aphtha and excoriation of buccal membrane; purging liquid; contains mucus; no eruption.

To have,—astringent mixture, opium, catechu, and chalk with spirit ammon. aromatic.

Case.

No. 7.—Bullock, 6 days ill; aphthous patches and excoriations on gum; lying down; no purging; discharge from eyes; muzzle very dry; does not feed; chin resting on ground; nose extended. To have,—hyposulphite of soda, two ounces.

Case

No. 8.—Light-coloured bullock; 2 days ill; dung in good order; muzzle dry; off feed; gums and buccal membrane looking well; gums a little congested; one or two clots of blood came away with the dung.

Akna.

Visited the village of Akna; found that all the cattle affected were recovering and no new cases occurring.

The villages of Sonatikri and Melchi are suffering. In Sonatikri disease exists in the houses of Gobindo Saont, Madhub Mondle, Kero Mondle, &c.

Akna, 13th April 1870, 7-30 A. M.

JOGESSUR KOLOO, of Dalimba, 53 years old, says:—I am an oilman and have lived at

Deaths from *puschima* and *gootee*.

Dalimba ever since my birth. I had 10 head of bullocks and 1 cow, but I lost 5 of *puschima* in the months of Assar (July), Srabun (August), Assin (September), and Bhadore (August), and 4 of *gootee* in Magh (January). I lost the 4 within 18 days. The disease *gootee* appeared

Origin of disease.

in my house in the middle of January last. The disease first appeared in our village in the house

Treatment.

of one Mohesh Khara. I gave no medicine whatever in *gootee* cases, but I gave black pepper

Duration.

and the root of *apan* tree in *puschima* cases, but without benefit. The affected cattle died

Sheep, goats, &c.

in 4 or 5 days of *gootee* and *puschima*. I have not, or had not, any sheep, goats, or buffaloes. The *gootee* cases appeared one after the other, and not all at once. I have 8 beegahs of land. Two old bullocks got the *bussunto*, but they survived. I had one plough and a pair of bullocks, but none now; the cattle are dead.

I will hire plough cattle and till this year. The two old cattle work a little on the *ghanee* (oil-machine). The *puschima* came on in different months. My cattle were stall fed, and never were allowed to graze. At the time I lost cattle from *puschima*, there were no other deaths from that disease in any other house in my neighbourhood. The symptoms in *puschima* cases are,—off feed, dull and heavy look, running from eyes, mouth, and nose, purging watery stool. There is swelling of the belly. My animals died in 4 or 5 days. Gave boiled rice to the sick, but the affected animals would not eat. Before the attack they would eat straw and *khullee* (oil-cake) and would drink water. I estimate my loss at 200 Rupees. The cattle that died of *gootee* a few days ago had *aishoo* (foot and mouth disease) 2 years ago. I have never seen a cow affected with *aishoo* twice. I do not get so much oil as I used to do before the outbreak.

Symptoms of *puschima*.

Treatment.

Loss.

Foot and mouth disease.

KOYLASH CHUNDER GHOSE, *goalla*.—I live at Akna, Nundeepoor. I sell milk and hold lands (two beegahs). I had 7 cattle, *viz.*, 2 cows and 5 bullocks. I have lost all of them of *gootee*. I lost them in Falgoon (February). I lost them within one month. The disease attacked one after another. I have not been able to buy any fresh cattle. I do not sell milk now. I shall try to till my lands by hiring ploughs; I may get them at Akna, Melchee, or Balore. I have lost 125 Rupees or thereabout in cattle. I have not been able to procure money; hence my inability to purchase other cattle hitherto.

Loss of cattle.

Value of cattle lost.

BUNGSHEE GHOSE, *goalla*, 65 years old.—I am an inhabitant of Akna, Nundeepore. I am a *goallah* by profession, and sell milk and *dáhee* (curd). I till 36 beegahs of land. I had 20 head of cattle, *i. e.*, 4 bullocks, and the rest cows, out of which I lost 14, leaving 2 bullocks and 4 cows; all these died of *bussunto* in Falgoon (February) and Cheyt (March). They died within a month. One bullock is still ill and looks as if it is dying. Every one of my cattle had *gootee*. Five have recovered and one, as already said, is still sick. I have four sheep, they had no disease; no goats. I have never seen sheep attacked with *gootee*. I used to give green grass, *bhoosee* and *khullee* (oil-cake), but the sick animals would not eat anything. I have lost Rs. 220 by the death of my cattle. Those which give milk are kept at home, as also the bullocks, but those of the cows that are dry, are let out to graze in the fields. Fifteen years ago there was an outbreak of *gootee*, but that was milder than the present outbreak. Once before in my life I saw the *gootee*. The symptoms were the same. I have all along lived in this village. I was born here. I will not be able to till my lands this year. I have lost the means of ploughing. I have no means of buying cattle. I have no *paddy* in store. The little that I had has been made over to my creditor (*mahajun*). I find it difficult to get two meals a day. I work daily for my bread. I labour as a cooly. The *mahajun* will not lend money now, inasmuch as I have lost my property consisting of cattle, and my business (selling milk, &c.) has seriously suffered.

Loss of cattle.

Sheep.

Value of cattle lost.

Previous outbreaks.

Not able to till land.

Reduced to daily labour.

BANESSUR KHARA, *goalla*, of Dalimba, 47 years old.—I was born in this village, and have ever since lived here. I do not sell milk, but am an agriculturist, holding 10 beegahs of land. The disease *bussunto* appeared in my brother Mohesh's house in the month of Aughan (November) last; my brother has gone to a distant place. The disease was first seen in my brother's house in a cow three years old reared in the house. My brother lost 12 head of cattle, being two bullocks and ten cows. My brother still has 18 left. They had the disease, but have survived. Out of the 18 living three are bullocks and the rest cows. The last case occurred in Magh (middle of January). The animals took ill one after the other. My brother's cattle used to go out grazing. I have got another brother named Shushtee who has lost 10 cows of *gootee*, and he has got still six cows and two bullocks. The latter have been recently purchased. The surviving animals had the attack, but they have recovered. My nephew Woodhur Khara (also absent) lost 11 cattle of *gootee*. He has still 10 which had the attack, but have survived. His stock consisted of one bullock and the rest cows; the bullock is dead. The cattle of my brother Mohesh used to go out grazing near the railway station of Mugrah in the field called Bonerdangah, and amongst the herd was the particular animal at first affected. The Grand Trunk Road passes near the field of pasture. Our cattle and those belonging to the village of Punsoor used to graze there. The reason is that we knew the owners of the field very well; hence my brother's cattle grazed there. No other cattle would graze there. Our family owned about 200 head of cattle, and all of these went to Bonerdangah. There has been no disease at Punsoor, but the moment the Punsoor people heard of the outbreak of *gootee* in Mohesh Khara's house, then they ceased taking their cattle to that field near the railway station. I do not know whether there was any disease in the houses standing near the station or road. Punsoor is close to Dalimba, but it is half a mile distant from the latter village. The cattle of Goberdhun Ghose, Sreedhur Ghose, Madhub Ghose, and Koylash used to graze with ours in the particular field. I gave no medicine, but I give straw (cut) and *khullee* (oil-cake), which the cattle refused. No green grass could be had at the time. The lands were dry this year, as there were no rains. We could get no *doob* grass then. Out of 200 head of cattle we lost about 125; every one of the 200 was attacked with *gootee*.

Origin of disease.

Cattle belonging to the Khara family and Punsoor village grazed together.

Punsoor cattle not attacked.

Treatment.

Statistics.

Evidence of a money-lender.

GOPAL KRISTO BANERJEE, of Akna, 44 years old.—I was born in this village and have lived in it all my life. I am an agriculturist, a cloth merchant, and have *muhajunee* (banking, lending) dealings. I lend money to the ryots. I have let out Rs. 1,500, which yield an interest of 2 pice in the rupee monthly. In some cases I charge interest at 1 pice and 1¼ pice to the rupee. I hold 15 beegahs *jummai* land, whereupon I grow late rice. I trade in cloth to the extent of Rs. 3,000. I have no cattle. My debtors till the land for me. The disease is still existing. The people have not commenced buying cattle for fear of their catching the disease. I fear I shall have to lend money to the people who have lost cattle for the purpose of buying new stock. The fall of rain will start the cultivation of lands, and will very likely help the disappearance of the disease; 11 or 12 years ago I saw similar disease in this village, but that was milder than the present outbreak. Besides, all the cattle were not affected, and only one-fourth of the number attacked died. I never in my life saw any other outbreak. After the last outbreak there was not much occasion for the ryots to borrow money for buying cattle. The present murrain has brought great misery on the people who have not had good crops since 1272 B. S. (1865). There are several people who have been so much reduced of late, owing to the loss of cattle, that I do not think I shall be able to trust their repaying me, and will therefore not be able to lend them money. Such people will have to labour day by day, and obtain a livelihood. I fear that I shall suffer loss to a certain extent, inasmuch as poor people who have lost cattle will not have the means of repaying me. I have never known a case of cattle poisoning.

Interest charged on money lent.

Previous outbreak. Effects trivial. Reasons.

Misery caused by present outbreak.

Witness's cattle escaped infection.

UMBICA CHURN GHOSE, 57 years old, a resident of Akna.—I am an agriculturist holding 26 beegahs of paddy land, and owning one plough and three bullocks and one cow and a calf. My cattle were never affected with *gootee*. The milkmen who live at a distance of 10 to 15 beegahs (3 beegahs equal to an acre) had the disease *gootee* in their houses. I consider the disease to be infectious. I cannot give exact dates, but from the time the disease raged violently, I did not allow my cattle to go out or any outsider to enter my cow-house. I also kept the cattle-shed and cattle very clean. To these precautions I attribute the exemption of my cattle. Baboo Doorga Prossaud Ghose, Rai Bahadoor, Baboo Nobin Chunder Singh, Baboo Becharam Bose, Baboo Dourga Churn Nough, Baboo Tariny Churn Bannerjee, Baboo Brindabun Mookerjee, Baboo Gooroo Doss Bannerjee, Baboo Mutty Laul Nough, Baboo Nobin Kisto Paulit, Chuna Bagdy and a few other Bagdies, and one Koloo (oilman) had no disease amongst their cattle. They are not in the habit of letting out their cattle for grazing. They also adopted sanitary precautions. Some of them fumigated their cattle-sheds. The stuff called *dhoona* (resin) was burnt and the deity Shitolah was worshipped within the cattle-sheds. A few slaughtered kids before the deity, but not generally. I have heard that fowls had *gootee*. In case of future outbreaks I would recommend segregation, but I must state that the ryots have no place for effecting segregation. They have not got proper places for separation. As for the medicine, the Doctors know about that. I would also recommend cleanliness. It would be better if the dead bodies were buried; but there will be a difficulty in effecting this, inasmuch as the Hindoos will not like to bury the dead cattle, and the poor men may not have proper places for burial. At present when cattle die their bodies are thrown away. I have never known a cattle poisoning case in this part of the country. There is no regular *bhugariah jumma* here, but the moochies who take the skins give a few pairs of shoes to the zemindars or zemindary amlahs. The *pikars* buy hides from the village moochies. Five or six per cent. of cattle die from ordinary causes yearly. Butchers buy cattle from our village occasionally. [*The deponent is a highly respectable person in the village.*]

Isolation, cleanliness, &c., practised.

Other instances.

Fumigations.

Difficulty of practising segregation.

Burial recommended.

Difficulties.

Cattle poisoning and hide trade.

Evidence of GOBORDHUN GHOSE, *age* 45 *years, of Punsoor,* 13*th April* 1870, 6 P. M.

No disease at Punsoor village.

I am an agriculturist and a milkman. I hold 15 beegahs of land and own four cows and two bullocks, as also one plough. My cattle had no disease. In fact here was no disease in our village this year, nor for some years past. Fifteen years ago there was *gootee* in my village. Our village cattle generally graze in the field called Bonerdangah near the railway station and very near the Grand Trunk Road. The cattle owned by the Kharas of Dalimba used to graze there. The cattle of the latter took ill, I think, in Magh last (January), and from the time we came to know of this circumstance, we refrained from taking our cattle to that field, and commenced taking them to the east side of the railway. Before the appearance of the disease among the cattle of the Kharas, our cattle used to graze in the field to the west side of the railway station. I cannot say how the cattle of the Kharas took ill and how our cattle escaped. We have taken care not to allow our cattle to mix with the cattle of the Kharas; over and above 150 head of cattle belonging to the Kharas used to graze there. The cattle of eight families of our village, numbering 125, grazed in the same place. The disease 15 years ago in our village was as virulent as it has been this year at Dalimba. I consider the disease *gootee* to have travelled from Burdwan and other districts lying to the west, and that it has been brought to our part of the country by sheep and buffaloes

Previous outbreak.

Reason of immunity of Punsoor cattle.

Cattle kept separate from those affected.

Disease introduced by cattle from Burdwan.

HOOGHLY.

bought from the western districts. I have heard that the disease has frequently been appearing in the western districts. The symptoms of *gootee*, as seen now, were the same as in cases which occurred 15 years ago. The murrain 15 years ago at first appeared in our village. I consider the disease to be infectious; hence the separation of our cattle; 15 years ago our cattle and the Kharas' cattle used to graze on the Bonerdangah. When there the disease attacked our cattle; the Kharas would not bring their cattle there, and they escaped that time. When the sickness appeared 15 years ago, there was a good deal of talk in the village, and our fathers had the disease among their cattle in their days, but I had not seen any disease before that. One attack of *gootee* gives immunity to the cattle against a second. Last year there was *gootee* on the east side of the river Koontee, namely, in Joypoor, Bagaty, Sultanpoor, and Demra, and the disease was very severe. Punsoor, Dalimba, Akna, Balore, &c., are on the west side of the Koontee. Five years ago there was disease at Mamoodpoor, to the west side of the river, and about two miles distant from our village. I am aware of no other villages where the disease appeared after the attack in our village 15 years ago.

Symptoms of *gootee*.

Escape of the Kharas' cattle 15 years ago.

Disease in 1869.

Disease five years ago.

NUFFER GHOSE, 50 years old, of Punsoor, agriculturist.—He says the disease that is raging at Akna is called *bussunto*. I saw the disease in our village 15 or 16 years ago. Before that time I did not see any such disease. I did not know whether there was any disease in my father's days. I am not sure, but I have heard that a first attack of *gootee* gives immunity to the cattle against a second.

SREE NAUTH GHOSE, 35 years old, agriculturist and milkman.—I know that *bussunto* is prevailing at Akna. In our village there was *gootee* 10 or 15 years ago. I never saw another attack.

Village Milchee, 14*th April* 1870.

1. Bullock, 12 years old; ill 12 days; off feed; purging, dark, clay-coloured; not passing any blood; appears to be recovering.

Case.

2. Bullock belonging to the same man, ill one month, 25 years old; had a severe attack of *bussunto* and is very much debilitated. Inside thighs and all about mouth have a scalded appearance; eyes more or less closed, with viscid discharge; has had maggots and sores; stall covered with ashes; turpentine has been applied over the sore; animal ruminating, feeding since yesterday; dung clay-coloured, relaxed. This man lost one cow and two bullocks of *gootee* within the last 20 days. Disease first appeared in the house of Goyaram in Falgoon last (February); five cattle in the village died; disease still prevails; nine recovered; there are about 200 head of cattle in the village. (A dead crow is tied to the tail of the animal No. 2 for preventing it being annoyed by live crows.) Forty years ago there was *gootee* in the village, and the attack was milder than the present attack. The people do not know whether the disease ever appeared in the village before the last outbreak; one attack gives immunity from another (eyes of No. 2 bullock affected; has also eruptions on the body). The disease travelled from Baloregunge. It crossed the river and came here. The cattle of Baloregunge came here since the outbreak, and the cattle of this hamlet had been there.

Case.

Particulars of outbreak.

Disease 40 years ago.

Source of present disease.

Village Joypoor, 14*th April* 1870.

Half a mile off railway station; had disease last year in Assar (June); no disease this year. About 35 head of cattle died there. The cattle graze on the west side of the Khall. The village stands on the east side of this stream. Ten or twelve years ago there was another outbreak of *gootee*.

Khall (the Koontee.)

Disease 10 or 12 years ago.

Bagaty village.—No disease now. This village adjoins Joypoor. There was disease in Assar (June) last, and two head of cattle died. The people do not recollect of any other outbreak. There are but a few cattle in this village.

Disease in 1869.

Sultanpore village.—No disease at present. In Magh (January) before last, *gootee* or *bussunto* appeared in this village. It came from the village of Alikhoja, Hoosnopoor. The disease continued to rage for three months and then disappeared. There were 200 head of cattle in this village then, of which nearly 80 died. A man 50 years old says that he never saw any such disease in this village before.

Disease in 1869.

Boycanthpoor village.—About 300 head of cattle. At present there is no disease of any kind, and there has been no *bussunto* in this village. The cattle here and those of Sultanpoor have been grazing in the same field, yet there has been no disease here. There has, however, been *aishoo* in 1274 and 1275 (1867-68); no deaths; 3 or 4 calves only died. No *puschima*.

Foot and mouth disease in 1867-68.

Kochatie village.—About 40 head of cattle. There is no disease. *Gootee* appeared twelve or thirteen years ago, and several cattle died. Since then there has been no disease. There

Disease 12 years ago.

HOOGHLY. was disease at Demra, and the cattle of the village and those of Demra would graze in the same field. At the time, however, Demra was affected, the cattle were not allowed to mix. No *puschima*. Last year there were three or four cases of *aishoo;* no casualties.

Disease in 1869. *Demra village.*—About 200 head of cattle; *gootee* appeared in Jyet (May) last. The disease continued in Assar (June). About 100 head of cattle died Demra is separated from Kotchaltie by a field. The people of both villages hold land in the same field, one-sixteenth portion of culturable land remained fallow for want of bullocks. No disease now.

Disease in 1868. *Nothangram village,* west side of the Khall (Koontee).—No disease now; about 50 head of cattle. Lost 7 to 10 head of cattle from *gootee* about 2 years ago after the rains. The disease came from the village of Punsoor. The Punsoor cattle graze on the other side of the railway, ours on this side. Joypoor and Bagaty were affected at the same time that the disease prevailed here.

Puschima in 1869. *Bashdelpoor village.*—There are nearly 100 head of cattle. No *gootee* for the last 10 years. Last year in Pous (December) 10 or 15 head died of *puschima.*

PORMANUND GHOSE, 55 *years old, of Bashdelpoor,* 15*th April* 1870, 7-30 A. M.

Disease in 1869. There are now 100 head of cattle in this village. There is no disease (*bussunto*) now, and the oldest man does not recollect the occurrence of the disease at any time. In Pous and Magh (December and January) there was cholera among cattle in this place, and about twenty to twenty-two head of cattle died. The symptoms are,—purging watery stools, discharge from mouth, body cold. Not very thick saliva was discharged from the mouth. The attacked cattle died on the first or second day. There are cow doctors in the neighbouring villages who treated the disease and gave some medicines (not known). They termed the sickness *alawoota* (cholera): not a single animal survived. The longest that lived was two days only. The carcasses were thrown into the *Bhagar.* The moochees did not take the skin, and the jackals and dogs ate them up. There are no moochees here. *Puschima* appears now and then, and an animal attacked with *puschima* may recover. Cholera among cattle is frequent in this village. In October (Kartick) last only two head of cattle were attacked with cholera. It comes on every third or fourth year. The disease is not infectious, as it does not spread about amongst the entire flock.

[*N. B.—The people of this village appeared to be far from intelligent.*]

Village Bagdangah, near Chandernugger, 31*st March* 1870, 10-45 A. M.

Case. BHOGOBAN GHOSE'S cow; had six calves; 14 days ill of *gootee* or *bussunto;* has in all seven cows and five calves; at first attack had profuse discharges from eyes, nose, and mouth; great difficulty of breathing for five or six days; bloody discharge from nose; more discharge from eyes than in any former case; numbers of small eruptions on sides of neck, dewlap, shoulders and arms, especially on neck; eruptions on udder, which is covered with crusts. On inside the left thigh close to the udder, a large confluent patch; vagina more or less destroyed by maggots; the crusts are easily detached, and the confluent patch is partially healed; very weak; great difficulty in walking a distance of 12 yards; staggers. [Mirza Mahomed Ali Jan, a newly joined member of the Commission, says that the disease at Hameerpore is exactly like this]. Eyes partially closed and considerable effusion under eyelids; discharge from mouth viscid and bloody. Round each pimple the skin is raised and the hair is erect; on scraping off the hair a congested surface is disclosed; the inside of thighs has a scalded appearance; head and nose poked out, and neck kept straight for facility of breathing; purging stopped two days; purged watery stools, no blood.

Case. 2. Bull calf of above; age 8 months; 3 days ill; condition poor; little discharge from nose and eyes; purging; conjunctiva congested; inside of hind shanks a little excoriated from discharge; prepuce congested. Disease here since Falgoon (February); 4 died; 2 sick cattle kept apart—20 yards—from the healthy cattle.

Case. 3. Bull; age 3 years; ill 6 days; eats little; muzzle dry; discharge from eyes; conjunctiva much congested; feverish, great thirst; no eruption; coat staring; no purging.

Case. 4. Cow; had 2 calves; 6 years old; condition poor; nine days ill; present symptoms,—discharge from eyes, nose, and mouth; muzzle dry; on gums, inside and outside, excoriations and aphtha; tongue much furred; conjunctiva much congested; œdema of the lids; vagina slightly congested; purging clay-coloured; off feed; no thirst; no eruption; no roughness. Saw another cow, recovered 8 days, passing thin clay-coloured stools.

RAMGOVINDO SEN, of Nowpara, 45 years old, born here, has 8 head of cattle, *viz.,* 2 bullocks and 6 cows. Has 100 of beegahs land; requires 4 or 5 ploughs and 10 head of cattle. Has one plough; hires ploughs in the cultivating season; cannot afford to keep

Hiring ploughs.

HOOGHLY

4 or 5 ploughs. It is cheaper to keep cattle, but has no money to buy them. Had 8 head of bullocks before the cyclone of 1864. Some of the bullocks died of old age, and some from disease (*benga*); others hire ploughs and cattle for ploughing; those who cannot afford to hire ploughs, get from those agriculturists who can spare. Each plough and 2 bullocks, per day, cost 4 annas; the bullocks work from morning to noon. This year in Magh and Falgoon (January and February) the cattle were attacked with *bussunto*; the disease has now disappeared; some 20 head of cattle died; 5 or thereabout recovered. Considers the disease to be dreadful. Had not seen the like disease in his village in his life. Had heard of this disease breaking out elsewhere. *Bussunto.*

BHOLANAUTH GHOSE, *goalla*, of Bagdangah, says that he keeps 8 head of cattle. Had no disease amongst his cattle. Had disease (*bussunto*) in his village. It commenced this month, Chyet (March). About 12 already attacked, and 4 died; never in his life had he seen like disease in his village [witness 40 years old]; the disease is new to the village. Symptoms,—twists about; excoriation within the teeth; off feed; purges watery stools; in some cases there is blood mixed; running from the eyes, nose, and mouth; eruptions on the skin, as seen by the Commission. A cow that gets the disease once does not get it again: on the 3rd day purging sets in; the cow dies in 7 or 8 days; recovers after an illness of 10 or 12 days; on the 4th day generally eruptions on the skin are seen: in some cases only eruptions appear. He was born in the village. Never heard of the appearance of the disease in his village. Never heard of the breaking out of the disease in the neighbouring villages. An old inhabitant of Belkooli states that the disease appears in some village or other every year; the mortality depends upon the type of the disease. If the type is very severe, then 15 out of 20 die; if mild, there is hardly any casualty. *Puschima* is more fatal than *bussunto*. There has been *puschima* in his village. It is a different disease. *Bussunto* is not so fatal as *puschima*. *Puschima* appears rarely, and when it appears it attacks one in a herd. Symptoms,—respiration forced; shivering; the tongue swells; hoven; running from eyes, nose, and mouth; dies in 2 or 3 days. *Puschima* is not infectious; *gootee* is. There is *khoorah*; it appears about every 10 years. It is not fatal; the cleft of the hoofs is sore. It is not infectious. Cattle giving milk are never allowed to graze; feeds with straw and oil-cake. Other cattle go out to graze and return home in the evening. There is pasture land quite sufficient for the grazing of cattle. Dead bodies are thrown into the *Bhagar*; there are moochees who take skins; does not know whether there is any *bhagaria jumma*. Moochees give shoes to zemindaree gomastas' agents; moochees make shoes and sometimes sell them. Never sell cattle. *Pikars* do not come to this village. Cattle are not sold in the hât. They are purchased from the villages close by; the cattle of Bagdangah do not mix with the cattle of other villages; no Mussulmans in the village; the sick cattle are separated, but not kept far apart, as there is no room; knows that separation prevents the disease from attacking other cattle. If there was space he would separate healthy cattle from sick; the sick one to be kept apart, and the healthy kept away; the number of cattle does not increase owing to deaths amongst calves and old cattle. There are 100 head of cattle, 14 annas ($\frac{7}{8}$ths) cows and 2 annas portion ($\frac{1}{8}$th) bullocks; 20 cows give about 8 calves yearly; 4 die out of 20 cows per annum; cattle die of snakebite and of *puschima*.

Symptoms of *bussunto*. History. *Puschima.* Symptoms. *Khoorah.* Infectiousness Milch cattle. Feeding. Pasture land. Disposal of dead. *Pikars.* Separation. Stock does not increase.

Answers to the questions in Form 4 of the Indian Cattle Plague Commission, by BABOO JOY KISSEN MOOKERJEE, *Zemindar of Hooghly.*

2. The answers to questions 1 and 2 will be found in the return hereto annexed. Locality and number of cattle.

3. Excepting the English and up-country bulls and cows, which altogether do not exceed 100 in number, in the possession of the Rajah of Burdwan, Mr. Stalkartt of Goosery, and perhaps one or two other gentlemen, all the cattle in the Hooghly and Burdwan Districts are of the country breed. The price of cattle in the Burdwan District is a little higher than that which prevails in the Hooghly District. The following table shows the prices at present prevailing and those which obtained ten years ago:— Breed.

Price of cattle.

DISTRICTS.	PRICE OF 1 COW		PRICE OF 1 BULL.		PRICE OF 1 OX.	
	10 years ago.	At present.	10 years ago.	At present.	10 years ago.	At present.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Hooghly	12	20 to 25	8	15	10 to 12	25
Burdwan	17 to 18	25 to 30	10 to 11	25	12	25 to 30

HOOGHLY.

Uses.

4. Oxen and bulls are employed in agriculture and as beasts of draught and burden; the cows are never so employed. The people entertain a superstitious regard for the cows and treat them with great care and gentleness. The oxen and bulls are also treated very gently by husbandmen and cartmen.

The whole of the dairy produce (milk) is consumed daily by the owner and the members of his family. Poor men sell the excess milk to their rich neighbours or convert it into *ghee* for disposal in the market. The milkmen after supplying the demands for milk, convert the residue into milk-curd, or butter or *ghee*.

Housing.

5. The cattle are housed as well as the means of the owner permit. The sheds are generally kept very neat and clean, and to protect the cattle from being bitten by insects, the atmosphere of the sheds is filled with smoke every evening either by burning resin or dried cowdung. A cattle-shed usually consists of a low thatched hut, the floor of which is sometimes tiled, but generally consists of a slightly inclined mud plane, down which the dung and urine fall into a narrow drain along the edge of the plane.

Feeding and watering.

6. The oxen, bulls, and cows are fed twice every day on straw cut into short shreds and steeped in a mixture of mustard cakes and water. They are also allowed a sufficient quantity of grass in places where there are no pasturage lands. The grasses generally available for pasturage are the *Doob* (Cynodon Dactylon) and the *Mooto* (Cyperus Communis). The water which the cattle drink is procured from the nearest pond or khâl, whether that water be good or bad.

Herding.

7. In thickly peopled towns and villages, situated in the midst of other villages, the cattle are never herded. In agricultural villages the cattle are herded in the morning, and driven for pasture in the charge of little boys almost throughout the year, excepting only on very moist days.

8. At present the cattle are never driven to other districts for pasture. Formerly large numbers of cattle used to be driven from the Midnapore District and the southern portion of the Hooghly district.

Condition.

9. The general condition of cattle in the Hooghly, Burdwan, and 24-Pergunnahs Districts is not such as might be desired. The cattle in these districts are evidently degenerating. This is principally owing to the want of pasturage lands, except in portions of the Burdwan District to the want of intermixture with other breeds, and perhaps also to the general unhealthiness of climate, which has within the last 10 or 12 years desolated so many villages. It is much to be regretted that the people in these districts cannot be induced to set apart a few beegahs of land for pasturage in each village or field. The small patches of land which for some reason or other unavoidably lie fallow are used for pasturage, but they yield very poor nutriment to the cattle. As to improving the breed by special bulls purchased or imported for the purpose, the people would never dream of such a thing.

Supply of stock.

10. The stock is kept up by breeding, but no special bulls are kept or imported. I think the number of cattle is decreasing in these districts, and the rise of price within these 10 years is owing to this decrease.

Markets.

11. There is no regular cattle mart in the Hooghly and Burdwan Districts. Cattle breeders periodically drive their cattle from village to village, and dispose of as many of them as they can. The people of these districts not unfrequently purchase cattle in villages and markets in the Midnapore and Bancoorah Districts, but their usual practice is to buy cattle from cattle breeders and such of their neighbours as have any to spare.

Exports.

12. Formerly cattle were not exported from the Hooghly and Burdwan Districts to other places, but owing to the increased demand for beef in Calcutta, the agents of the Calcutta butchers occasionally purchase cattle to the number of 100 or 200, and take them down to Calcutta.

Hide trade.

13. There are several persons who trade in hides in these districts. They purchase the hides from *moochees* in neighbouring villages and export them to Calcutta. The native butchers (*chamars*) use the hides for making shoes, oil-flasks, strings, toys, &c. The local trade, however, is not extensive, and the nefarious practice of killing cattle by poison for the sake of their hides is almost unknown in these districts.

Mortality.

14. The ordinary death-rate among cattle does not exceed 4 to 6 per cent. in a year, but in times of plague the mortality is 40 to 60 per cent. in 2 or 3 months.

History.

15. It is curious that the cattle plague has been of frequent occurrence in the Hooghly and Burdwan Districts since the date of the prevalence of epidemic fever in these districts. Previously there was a cattle plague in one village or two in 9 or 10 years, but during the last 10 or 11 years there has always been a plague in one part of the district or the other.

Nature of murrains.

16. There is no premonitory symptom by which the outbreak of a plague can be anticipated. A husbandman sees one morning one of his plough cattle indisposed, finds it averse to take its usual food, and perhaps concludes that it is a sudden fit of indigestion; but

HOOGHLY.

he finds on the next or on the 3rd morning that small eruptions are visible on its body, and that perhaps one or two more of his bullocks and cows evince the same want of appetite. The disease spreads in all directions as if in radii from a common centre, and in 10 or 15 days there is a regular cattle plague in the village. Sometimes two or more cattle are simultaneously affected in the village, and spread the infection with a corresponding rapidity.

Season.

17. The plague generally occurs in Falgoon and Chyet (March and April), *i. e.*, in the beginning of summer. The only form in which the plague occurs in these districts is the *gootee* or *bussunto*, the particulars of which will be given below.

18. The plague occurs in no other form in these districts. The *gootee* plague rages in a village generally from four to six weeks.

Statistics.

19. The answer to this question will be found in the annexed return showing the statistics of deaths in five villages.

Liability to attack.

20. There is no other breed excepting the country breed in these districts. With regard to age, sex, and condition, it will be seen from the annexed return that cows and calves are the most affected by the plague.

Symptoms.

21. The symptoms of the affection are as follows :—The first symptom which strikes the observer is dulness and stupidity of the animal. There is no shivering. The animal becomes averse to food, but not to drink. It does not ruminate. There is no perceptible alteration in the temperature of the skin, but there is salivation and the stomach becomes inflated. The eruptions become visible on the 2nd or on the 3rd day. There is no swelling of the tongue and throat, but the tongue becomes comparatively stiff, and it loses its usual motory power. There is difficulty of breathing, but no cough. The bowels become lax and the excreta are liquid, as well as mixed with blood and pus. This is looked upon as a sure sign of approaching death, which usually takes place on the 5th or 6th day after the attack. Affected cows are never milked, but it is said that if milked the quantity of milk is found to be considerably less than the quantity usually secreted. The animal keeps a standing posture for a day or two and then lies down, and in many cases does not rise any more.

Post-mortem appearances.

22. The dead bodies have never been scientifically examined, and therefore the condition of the different parts after death is not known to the people. The butchers (*chamars*) however, who open the bodies for taking the hides, say that they do not find any differences in the interior of the body ; but as they are ignorant men, a slight inflammation or discoloration of some organ might escape their notice.

Infectiousness.

23. The *gootee* plague certainly appears to be contagious. It appears so not only from the fact of the cattle in the same shed with an affected animal being the first attacked, but also from the manner in which the plague spreads.

Treatment.

24. In most cases the disease is allowed to take its own turn and no medicine is administered, but in some villages in the Hooghly District the affected cattle are made to take a decoction of black gram (*Phaseolus Melanospermus*), *cala* (*Curdanthera Triflora*), beetle leaves, lovage (*Ligusticum Ajonan*), leaves of the ramoon tree (*Trophis Aspera*) and *biddhuruck*. In some villages in the Burdwan District hot water is dashed into the mouth of the affected cattle. These medicines, however, do little good. The rate of mortality in most villages is unaffected by human interference, and sometimes only one or two in a 100 escape from death by the effect of these medicines.

Sanitary measures.

25. The cattle-sheds, as I have said before, are daily cleaned, but no extraordinary care is taken when the cattle are affected. In the Hooghly District they are not removed to other places, nor do the husbandmen ever think of giving the cattle drinking water from a tank not used before. In some villages in the Burdwan District the affected cattle are kept separate. No disinfecting agencies are employed, if we may except the smoking operation alluded to above. The carcasses are not buried or burnt, but thrown away on a piece of ground called *Bhagar*, specially reserved for the purpose, where they are gradually devoured by dogs, jackals, and vultures.

Horns, hoofs, &c.

26. The horns and hoofs of dead cattle are not deemed to be worth taking even by the butchers, and are allowed gradually to decay in the *Bhagar*, but the hides of cattle (dead of the plague or otherwise) are taken by the butchers after the carcasses have been thrown away.

Other animals.

27. Goats, sheep, and other animals are not in any way affected by the plague.

Man.

28. Nor does it in any way affect man.

Present disease.

29. The plague is not prevailing in any part of these districts at present, but, as I have said above, this is not the season for the outbreak.

HOOGHLY.

Weather.

30. The effects of the weather or of heavy falls of rain on the plague have not been carefully observed, but it is believed that they do not exercise any influence whatever.

Improve breed.

Question of pasture land.

Cattle hospitals.

31. The best thing that could be done to improve the breed of cattle would be to import into the district up-country and foreign bulls and cows. I have several times tried to introduce this element on my estates, but owing either to the climate or some other cause which I could not make out, the bulls and cows gradually became sickly and died. The question of pasturage land is no less important. But it is difficult to suggest anything practical on this head. The ryots, finding that rice, vegetables, and other crops yielded a large profit, gradually brought the grazing lands into cultivation, while the minute division and sub-division of holdings incident to the Hindoo and Mahomedan laws of inheritance have reduced the holdings of the ryots into dimensions which seriously affect the existence of grazing lands. The Zemindars and other proprietors, on the other hand, find it much more profitable to let out the lands for cultivation at Rs. 2-8 or Rs. 3 rent, instead of allowing the lands to continue *ghas-cur* at a rent of 8 annas a beegah. A spot should also be set apart in each field, at a sufficient distance from human habitation, for the burial of carcasses. I would also propose that model cattle hospitals should be established in each district, not only for the treatment of diseased cattle, but also for the training of at least a few natives in each village as Veterinary Surgeons. No compulsion should, however, be used for the treatment of cattle, or for the separation of diseased cattle from the healthy, or for the burial of carcasses, &c. A few useful hints published in the form of a pamphlet for the treatment of cattle might also be advantageously circulated in villages through the Zemindars and Police Inspectors.

VILLAGES.	Year.	Number of Cattle before the Plague.						Number which died of the Plague.					
		Plough Cattle.	Draught Cattle.	Cows.	Steers.	Heifers.	Total.	Plough Cattle.	Draught Cattle.	Cows.	Steers.	Heifers.	Total.
Madhubpore, in Thannah Chunderkona, Hooghly, 1½ mile in length, 1 mile in breadth, surrounded on all sides by cultivated fields.	1274 (1867) ...	250	...	60	25	30	365	45	...	25	13	17	100
	1275 (1868) ...	250	...	42	14	15	321	53	...	28	10	12	103
	1276 (1869) ...	250	...	18	8	7	823	72	...	9	5	3	89
	1277 (1870) ...	250	...	15	11	13	289	...	...	...	...	...	...
Tatarpore, in Thannah Chunderkona, Hooghly, one square mile. There is a khal to the north, and fields on other sides.	1274 (1867) ...	120	...	30	15	16	181	16	...	5	4	3	28
	1275 (1868) ...	120	...	25	13	14	172	25	...	10	9	10	54
	1276 (1869) ...	120	...	22	11	16	169	60	...	17	10	12	99
	1277 (1870) ...	120	...	9	3	5	137	...	...	...	...	...	...
Russickpore, in Thannah Montessur, Burdwan. About one square mile, One Kuree khal to the north, and fields on all other sides.	1277 (1870) ...	351	244	358	120	165	1,238	76	109	73	40	60	358
Koomdhara, in Thannah Serampore, Hooghly, less than a square mile, surrounded by cultivated fields on all sides.	1276 (1869) ...	200	40	26	10	16	292	100	40	6	2	6	154
Total ...		2,031	284	605	230	297	3,447	447	149	173	93	123	985
							Deaths per cent. of stock ...	22	52	28	40	41	28

JOY KISSEN MOOKERJEE.

DISTRICT OF BURDWAN.

Statement showing the localities visited by Bussunto *in the Burdwan District during the year* 1870, *and the number of deaths reported in each village.*

Sub-division.	Thannah.	Village.	Date of outbreak.	Date of last return.	No. of deaths reported.	Remarks.
Sudder ...	Gangooria	Moheshdalla ...	23rd April 1869 ...	15th July 1870 ...	...	This table shows the distribution of the disease in the district, and approximately the number of deaths which took place. The statements of stock and number attacked are, evidently, so unreliable that they have been omitted, the figures given in different returns being irreconcilable. The disease is shown as reported up to the 31st of December, but it was then going on in several parts of the district. The symptoms described are those usually assigned to *bucanto*, and are given with greater accuracy in the evidence recorded by the Commission.
		Shaldaha ...	„ „ ...	„ „ ...	...	
		Dalpoor ...	„ „ ...	„ „ ...	}	
		Bamunpara ...	3rd June 1869 ...	„ „ ...	}	
		Roohakantpoor...	„ „ ...	„ „ ...	} 45	
		Shamespoor ...	„ „ ...	„ „ ...	}	
		Kamupara ...	26th February 1870	„ „ ...	13	
		Dadpoor ...	4th March 1870 ...	„ „ ..	4	
		Minapoor ...	16th „ ...	„ „ ...	6	
		Dhuredee ...	4th April 1870 ...	„ „ ...	4	
		Bugowan ...	15th „ ...	„ „ ...	5	
		Dhalai ...	„ „ ...	„ „ ...	35	
		Potumdha ...	23rd „ ...	„ „ ...	21	
		Gobindpoor ...	4th October 1870	15th October 1870	7	
		Bijra ...	„ „ ...	„ „ ...	16	
		Amudpoor ...	8th August 1870	„ „ ...	93	
		Gangooria ...	28th September1870	„ „ ...	6	
		Kooshagram ...	13th October 1870	30th „ ...	5	
		Sookoor ...	„ „ ...	„ „ ...	3	
		Bursoot ...	„ „ ...	15th November 1870	4	
		Huro ...	8th November 1870	30th „	5	Total deaths in Gangooria Thannah, 272.
	Sahebgunge	Rampore ...	10th March ...	15th July 1870 ...	8	
		Munderdihi ...	„ ...	„ „ ...	8	
		Chandra ...	„ ...	„ „ ...	10	
		Lashigram ...	5th August 1870...	15th August 1870...	10	
		Bhatacool ...	„ „ ...	„ „ ...	12	Total deaths in Sahebgunge Thannah, 48.
	Burdwan ...	Mundulpooker ...	2nd July 1870 ...	„ „ ...	13	
		Kahgram ...	7th „ ...	„ „ ...	9	
		Buharpore ...	14th „ ...	„ „ ...	8	
		Behelà ...	„ „ ...	„ „ ...	4	
		Shomepoor ...	16th December 1870	31st December 1870	24	Total deaths in Burdwan Thannah, 78.
	Munglecote	Neegum ...	8th July 1869 ...	15th July 1870 ...	29	Total deaths in Burdwan Sub-division, 378.
		Munglecote ...	1st January 1870	„ „ ...	79	
		Rogram ...	3rd February 1870	„ „ ...	46	
		Shimulia ...	4th August 1870	15th October 1870	62	
		Magram ...	21st January 1870	„ „ ...	286	
		Seemolie ...	2nd March 1870...	15th July 1870 ...	29	Total deaths in Munglecote Thannah, 502.
Cutwa ...	Keogram	Sherandy ...	13th January 1870	15th July 1870 ...	12	
		Gungatikmy ...	14th „ „	„ „ ...	6	
		Kakmhatty ...	„ „	„ „ ...	4	
		Malgram ...	12th December 1869	„ „ ...	175	
		Aukhoro ...	19th January 1870	„ „ ...	14	
		Kuchatay ...	„ „ ...	„ „ ...	5	
		Begconia ...	19th April 1870 ...	„ „ ...	7	
		Barinda ...	29th March 1870...	„ „ ...	9	
		Nogorunga ...	28th June 1870 ...	„ „ ...	6	
		Tildanga ...	9th September 1870	15thOctober 1870...	5	Total deaths in Keogram Thannah, 272.
	Cutwa ...	Ghoranash ...	11th February 1870	15th July 1870 ...	15	
		Dewan Serai ...	26th „	2nd March 1870 ...	23	
		Arjundihi ...	2nd March 1870 ...	„ „ ...	11	
		Boshombha ...	7th „ ...	15th July 1870 ...	25	
		Goshombha or Goalpara ...	22nd „ ...	„ „ ...	45	
		Koshee ...	25th „ ...	„ „ ...	31	Total deaths in Cutwa Thannah, 153.
		Gafoolia ...	18th July 1870 ...	31st „ ...	8	Total deaths in Cutwa Sub-division, 932.
Culna	Culna ...	Foringachy ...	25th June 1870 ...	15th „ ...	6	
		Badagachy ...	3rd July 1870 ...	„ „ ...	5	
		Barodowary ...	14thNovember 1870	31st December 1870	71	
		Srinanpore ...	2nd December 1870	„ „ ...	5	Total deaths in Culna Thannah, 87.
	Bhatooria	Kumalpore ...	25th March 1870 ...	15th July 1870 ...	1	
		Edratpore ...	27th „ ...	„ „ ...	12	
		Chundypore ...	22nd April 1870 ...	„ „ ...	4	
		Jalordanga ...	15th July 1870 ...	31st „ ..	28	
		Goalpara ...	5th October 1870...	15thNovember1870	19	

DISTRICT OF BURDWAN.

Statement showing the localities visited by Bussunto *in the Burdwan District during the year* 1870, *and the number of deaths reported in each village,*—continued.

Sub-division.	Thannah.	Village.	Date of outbreak.	Date of last return.	No. of deaths reported.	Remarks.
Culna,—*contd.*	Montessur..	Bahooidanga ...	7th October 1870...	15th November1870	7	
		Coxially ...	13th „ ...	30th „ „	6	
		Hat Shioonentia	3rd December 1870	31st December 1870	8	Total deaths in Bhatooria Thannah, 85.
		Dhenooa ...	2nd October 1870...	15th November1870	57	
		Kowra ...	„ „ ...	„ „ ...	19	Total deaths in Montessur Thannah, 140.
		Shajadpore ...	3rd „ ...	„ „ ...	64	Total deaths in Culna Sub-division, 312.
Bood-Bood	Bood-Bood	Gomooree ...	22nd Feby. 1870	15th July 1870 ...	200	
		Omoor ...		„ „ ...	50	
		Satnundy ...		„ „ ...	500	
		Leparah ...		„ „ ...	20	
		Joykistopore ...		„ „ ...	200	
		Fumanagur ...		„ „ ...	20	
		Khatooreah ...		„ „ ...	55	
		Kole-Kole ...	19th April 1870 ..	„ „ ...	5	
		Uchagram ...	19th January 1870	„ „ ...	7	
		Kakoree ...	19th April 1870 ...	„ „ ...	7	
		Depara ...	„ „ ...	„ „ ...	4	
		Gulshee ...	19th July 1870 ...	„ „ ...	7	
		Jijut ...	19th „ ...	31st July 1870 ...	1	
		Challagram ...	1st „ ...	„ „ ...	8	
		Jrakana ...	20th „ ...	„ „ ...	4	
		Sausanga ...	19th January 1870	„ „ ...	10	
		Rungpore ...	21st August 1870...	11th Sept. 1870 ...	3	
		Reipore ...	10th „ ...	„ „ ...	1	
		Gogram ...	9th „ ...	„ „ ...	1	
		Kosha ...	6th „ ...	„ „ ...	4	
		Koterokee ...	14th October1870...	30th October 1870...	2	
		Kashpore ...	14th Sept. „ ...	30th Sept. „ ...	1	
		Bahar Khomin...	5th October „ ..	30th Nov. „ ...	12	
		Joykisto Bati ...	6th „ „ ...	„ „ ...	26	
		Kosha ...	30th Nov. „ ...	15th December 1870	3	Total deaths in Bood-Bood Thannah,1,151.
	Shamabad	Jesondah ...	18th April „ ...	15th July „ ...	14	Total deaths in Shamabad Thannah, 14.
		Lagram ...				
	Ausgram ...	Coormulo ...	18th July 1870 ...	„ „ ...	10	
		Bishutpore ...	1st Sept. „ ...	11th October 1870...	7	
		Surr ...	19th „ „ ...	„ „ ...	2	
		Dhonkorah ...	30th October „ ...	30th Nov. „ ...	9	
		Warishpore ...	15th Nov. „ ...	15th Dec. „ ...	12	Total deaths in Ausgram Thannah, 42.
		Wuldihi ...	5th Dec. „ ...	„ „ ...	2	Total deaths in Bood-Bood Sub-division, 1,207.

The total deaths in the District of Burd wan during the year amounted to 2,829.

Village Taleet, District Burdwan, visited 16*th April* 1870, *at* 8 P. M. Burdwan.

Bullock, 6 or 7 years old; ill 9 days; feeds but little; recovering; has purged severely. No blood passed, but thick mucus; œdema round eyes; in very weak condition, but evidently getting better. Case.

Evidence of Ram Churun Misree.

Has lost 3 head of cattle; had 7; has 4 now; all are ill. The 3 that died showed the same symptoms as the one above mentioned now shows. Evidence of Ram Churun Misree.

In 1249 B. S., or nearly 30 years ago, his cattle suffered from *gootee;* calls the disease *bussunto;* lost 2 cattle,—all he had in 1249. History.

Three of the others are suffering from the same disease and showing the same symptoms. There are about 700 head of cattle in the village, out of which number nearly 25 have died of *gootee.* The disease has just commenced, having made its appearance in the house of one Taracotal about 20 or 25 days ago. Taracotal has lost 5 or 6 head of cattle, and has only two left; they are still suffering. The disease made its appearance from Satrumdee and Shaora Jamar, 2 mi sudistant from Taleet in the north-west direction. The murrain has been raging in those villages since Falgoon (February) last. Before Statistics. Date of outbreak. Source of disease.

BURDWAN.

Sheep and goats. the two latter villages had been attacked, Joykistopore had the disease. At Shaora sheep and goats suffered and died of *gootee*.

Course of disease. Nearly all the cattle at Joykistopore have died. The cattle of the affected villages and those of this village (Taleet) have been grazing together in the same fields; hence the origin and spread of the *gootee*.

Cause of disease. From this place the disease has travelled to Amar, a mile distant from this hamlet towards the east. The animals of Amar and those of Taleet also graze together.

Another outbreak. The general opinion is, that there has been no disease since 1249 B. S. But one man (Sreemontho) says that 5 or 7 years ago he lost 2 head of cattle of *bussunto*. He adds that one Manick Ghose also lost his cattle of the same disease.

Course of the outbreak of 1249 (1843). This subsequent attack was not a general one, and the neighbouring villages were not then affected. There was a cyclone and flood in 1249 (1843), and a large number of *beparees* from Raina, who had several head of cattle with them and who were stopping in the village at the time, lost their animals from starvation and the inclemency of the weather, and the carcasses were thrown into the fields. The stench was something fearful, and that caused the disease.

Origin of disease. The storm came on in Jeyt (May). It rained for 7 days continuously.

Supply of cattle. The people do not know in what country the disease originated, but they know that it comes from a north-westerly direction. There are no cattle markets near this village. The nearest haut is 40 miles distant from Taleet.

Sales. On very rare occasions the *beparees* bring cattle for sale. *Beparees* do not, as a rule, come and take away cattle from this village, but they do so on rare occasions.

Disposal of carcasses. About ten head of cattle are taken away annually. When the people want to purchase or sell cattle for agricultural purposes, they do so by private bargains. The carcasses are thrown into the *bhagar*.

Hides. The moochees take the skin. They hold the *bhagaria jummah*.

Effect on cultivation in 1249 (1813). The moochees make shoes, and sell hides to the *pikars*, who take them to Calcutta. The cultivation will suffer in consequence of this disease. Those people who have suffered by loss of cattle will let the land in *bhaug*, and even with that arrangement some land will remain fallow. In 1249 B. S. (1843) the murrain occurred in Aughun (November), when the lands had already been prepared, and they made arrangements for letting lands next year. These arrangements were easily made, inasmuch as in that attack the neighbouring villages did not suffer.

Infectiousness. The people are not aware of any case in which an agriculturist, being reduced to poverty from the loss of cattle, has had recourse to manual labour. This is an infectious disease; there are no places and no means for segregation.

Segregation. The people are of opinion that segregation may save cattle, but they have no places where they can take cattle to. Had they any such place, they would have carried their cattle hither, and thus separated the sick from healthy. Never knew of an instance of segregation.

Treatment. The disease is just commencing, and there are still several houses where it has not gone. No medical treatment of this disease has been tried.

Losses. They give the sick cattle rice gruel and soft green grass. In 1249 (1843) nearly every head of cattle died.

About 100 or 150 cattle have been taken ill, and are still ill, 25 having already died.

Puschima. *Puschima* appears but rarely in this village. It is called in Taleet *puschima nara*.

Symptoms. The affected cattle shiver and froth from the mouth; the coat stares, and they are off feed. Those that die, die within two or three days. The stomach swells out. When the cattle recover they commence purging, and purging is brought on by the action of medicine. The people give *chunam*, *huldee*, and cobweb to their cattle. It is not infectious; attacks one or two cattle; has no particular season.

Foot and mouth disease. *Aishoo* is not fatal. Last year there was *aishoo* in this village. Only calves died. Ram Chand's cattle had *aishoo* last year, and they have got *bussunto* this year.

History. Rinderpest about 1800. An old man of 86 years says that he saw *gootee* when he was 20 or 25 years old in Taleet.

Case. A bullock, 8 years old; 8 days ill; has commenced eating boiled rice for the last 2 days. There was running from eyes, nose, and mouth. There was purging also; mucus, but no blood; purged for 3 or 4 days; still purging. (The owner had 6 head of cattle, of which 3 got the disease. One has recovered, 2 are still ill). Gums congested around teeth; opacity of cornea; no eruption.

Case. Bullock, 7 years old; 4 days ill; off feed; no thirst; gums congested. Discharge from eyes, nose, and mouth; purging; has got congee.

Case. Bull calf, 15 months old. Discharge from nose and a little from mouth; congestion of gums; dry muzzle; ill since yesterday. Has not been purging.

Losses. Ten or 15 cattle died in this locality. The owner of this calf had 9 head of cattle. Has 4 ill now, and 1 bullock died 4 or 5 days ago. Three of those ailing are bullocks, and the other is a cow.

Katgora, visited 17th April 1870, 8 A. M.

Visit to Katgora. A bullock, 4 years old; 9 days ill; off feed; no thirst; purging mucus and blood;

Case. profuse viscid discharge from mouth, nose, and eyes; a little œdema around eyes and on cheeks below eyes; excoriations on gums, and aphtha on lower and upper lips. The

animal is lying down; great exhaustion; panting; occasionally has the peculiar click in respiration; eruptions on neck, cheeks, shoulders especially; but generally over all other parts of the body. The eruption consists of minute pimples, which cause the hair over them to be raised, and these raised dots or pencils of hair are to be seen in all parts of the body; there is great congestion, with slight prolapsus of rectum; blood and mucus dribbling away. BURDWAN.

A cow, 6 years old; ill 4 days; thirst; bowels relaxed; slight discharge from eyes and nose; congestion of gums around teeth; mouth hot; vagina slightly congested; the calf of the above cow also ill; has diarrhœa; vagina slightly congested. (These 3 animals belong to the same man). Case.

A cow calf, 1½ years old, 6 days ill; eats but little; profuse discharge from eyes, mouth, and nose; vagina much congested, with aphthous deposit; aphthous vesicle in mouth; purging, but not violently; difficulty in breathing; weak. Case.

Evidence of villagers.

SHEIK NUJOFOODDY, NEHALOODDY, SHEIK ALEEMOODDEEN, of Katgora, Canchunnugger, and MUNOOR HOSSAIN, of the same place, give the following information:—A month ago the disease known by the name of *bussunto* made its appearance in the house of one Nuffer Sheik, who lost 3 head of cattle of that disease. The house of one Shookroo was then attacked, and he too lost one. Shookroo's house adjoins that of Nuffer. The disease then came to the house of Shooka Sheik, who lost 1 cow. Shooka's homestead is next door to Shookroo's. Moeka's house was then attacked, and he has this morning lost 1 bullock. He has besides 3 sick cattle. There is at present disease in the houses of other villagers. The deponents do not know whether there has been any disease in any of the neighbouring hamlets, but they have heard that the village of Goitunpoor, across the Damooda river, 2 miles off to the west, had the disease. They believe the disease to be contagious. The disease is a common one, appearing, as it does, now and then, and carrying off several head of cattle. They have been seeing the disease from their boyhood, but it is not always in the village. It comes at an interval of 5 to 10 years, and has been as destructive as it is now. If 20 get ill of *gootee*, only 5 may survive, the disease being fatal. One attack gives immunity from a second attack: 3 years ago there was a milder type of *gootee*, and then only 2 head of cattle died in the village. There are only 200 head of cattle in this village. They buy cattle from the neighbouring hauts. There is a cattle market at Cotulpoor, 20 miles distant from Katgora. The villagers do not sell cattle in that market, nor to the *pikars*. Old cattle die in course of nature. They slaughter the barren cows, and sometimes sell them. Poor people may sell old bullocks, but this is not the rule. No sheep in this village. There are goats. Never saw any goats have *gootee*, or dogs. No Pigs. The moochees take the skins of carcasses. They sell skins to the *pikars* and make shoes. The bullock that cost Rs. 10 ten years ago will cost now Rs. 15. Never use cows, nor barren cows for ploughing. There are bulls in the neighbourhood which serve cows. The villagers generally here are not agriculturists. They drive carts and pack bullocks. They go to Cawnpore, Furrackabad, Chanka, Soondrie, Jhaldah, Ranchee, &c., &c. Knows of instances in which cattle with carts had *gootee* on the way, and died. Their own cattle died while thus travelling. They were purchased from villages *en route*. The disease was bad in Chanka, in Gya, 4 years ago, where and when they lost cart cattle. *Gootee* appears in winter and summer; at no particular seasons.

Rinderpest in March and April 1870. Spread of disease. Infectiousness. History. Mortality. Second attack. Rinderpest in 1867. Village stock. Supply of cattle. Markets. Slaughter. Goats. Hides. Price. Bulls. Cartmen. Rinderpest on the road. Season.

Visit to Palapooker, 18th April 1870, 6-30 A. M.

Palapooker village is inhabited by milkmen. On arrival at this place, the Commission saw 3 carts being laden with panes of glass. The carters said that they had come from Sasseram, in the district of Arrah (Shahabad), with oil, and that they are going back there. They also said that they have been going and coming for the last 4 years. When the carters left Sasseram, 6 weeks ago, there was no *gootee* at that place. Cartmen.

Evidence of SREENIBAS GOPE.

There are about 50 families of milkmen in this village owning 200 head of cattle, including bullocks; half are cows and half bullocks. They are also agriculturists. There is no other disease amongst cattle at present except *aishoo*. The last casualty in the village was in Magh last (January); another died in Falgoon last (February) of *puschima*. Annually the village loses 20 to 25 head of cattle, including calves, from ordinary causes. They never go to any cattle fairs or markets, but they always buy from villages. A cow Village stock. Foot and mouth disease. Ordinary mortality. Supply of cattle.

BURDWAN.
Price.
Increase.
Rinderpest in 1860.
Symptoms.
Eruption.

is purchased from 8 to 20 Rupees, a bullock from 5 to 30 or 40 Rupees. The cow that sells for Rs. 20 now would cost 10 years ago 12 to 13 Rupees. The bullock that cost now 40 Rupees would sell in days goneby for 20 to 25 Rupees. [The deponent is 55 years old]. Has been a *goallah* all his life. Ten or 11 years ago this village had *gootee*. The symptoms in *gootee* are,—dulness; ears drooping; off feed; purging blood and mucus; excoriations in the mouth; running from eyes, mouth, and nose. The animals die in 5 to 7 days. The coat is staring, and in some cases eruptions are seen. There are eruptions on the chest, thighs, udder, sometimes on the eye, and nearly on all parts of the body.

Puschima symptoms.
Season of rinderpest.

The symptoms of *puschima* are running from nose and mouth; no hoven; off feed; in some cases purging. The animal dies on the first day. The animal does not pass any blood. Shakes the head, and the tongue gets cold. The mouth turns black. *Gootee* appears in Falgoon (February) generally, but it may come on at any other time. It does not come on annually, but when it appears it kills nearly every animal in the house. Five or 7 years before the last outbreak there was *gootee* in this village. The deponent does not recollect when the village had another attack before the last but one outbreak; but he knows that the disease has come on from time to time at certain intervals. In the last outbreak the disease broke out in this village at first. From here it travelled to the neighbouring hamlet of Chandshor. Deponent does not recollect whether before the last outbreak any new cattle had been purchased and brought into the village. The disease travelled in the air. The disease *bussunto* is considered to be infectious, and the deponent states that the air brought sickness to one cow in the village. That infected animal imported disease to the neighbouring cattle. *Aishoo* is not fatal, but calves die of the disease. This village lost about 8 head of calves; they died in Falgoon and Cheyt last (February, March); no grown up animals died; the symptoms of *aishoo* are,—sore mouth and sores in the cleft of hoofs; the animal cannot eat, and maggots appear in the sore; the animal infected suffers as long as even a month; the people look upon *aishoo* as infectious; yet an animal that may survive from an attack of *aishoo* may get it again; one attack of *gootee* gives immunity to a second attack; does not think that *puschima* is infectious; *puschima* is invariably fatal. No medicines are given in *bussunto* cases, but the owner soaks *choora* (parched rice) and drenches it; they do not separate sick from healthy for want of a suitable place. The people think that they would save their cattle by separating, and they would separate if they got a suitable place. Five or 10 per cent. survive in *gootee* cases.

History.
Rinderpest in 1855.
Infectiousness.
Foot and mouth disease.
Symptoms.
Second attack.
Treatment.
Segregation.

Visit to Gungpore village.

Gungpore village, visited 18th April 1870, 7-30 A. M., on the east side of the Grand Trunk Road and 4 miles distant from Burdwan.

Rinderpest in 1870.

Met MADHUB CHUNDER GHOSE a Bengalee teacher (*guru*), who said that the disease *gootee* has appeared in the villages of Khood-koorie, Sackhari, and Jhooghy on the south side of the Damooda; the disease has been raging since Falgoon (February) last. The disease is now on the decrease, but there are a few cases of *gootee* yet.

Evidence of Tariney Churn Chuckerbutty.
History.
Rinderpest in 1862.
Village stock.
Effect on cultivation.

TARINEY CHURN CHUCKERBUTTY, 56 years old; *baree* (family residence) at Gungpore, and has all his life lived here; has seen *bussunto* among cattle in this village 3 or 4 times in his life. There have been frequent outbreaks of *puschima* and *aishoo*. Some 8 years ago *bussunto* made its appearance here; about 20 or 30 head of cattle died then; there are 200 head of cattle, or even less, in this place. Never saw cultivation interfered with in consequence of loss of cattle; has seen people letting their land in *bhag jumma* and hiring cattle, owing to casualties caused by *gootee*. Has seen agriculturists reduced to poverty, and take to manual labour and incur heavy debts, owing to loss among cattle. Neither the location of the village nor the caste or employment of the inhabitants has anything to do with the disease; as an instance, the deponent mentions his own village, which, he says, stands on the side of the Grand Trunk Road, where the *pikars* and *pikaree* cattle come often; yet the village has not been affected. There has been disease at Eley, a village adjoining this hamlet, and 7 head of cattle died in the month of Cheyt (March) last. Out of 8 head of cattle attacked, only one survived. What cholera is to human beings, *gootee* is to cattle.

Causes.
Rinderpest at Eley.

Convalescent case.

Saw a cow convalescent from *gootee* belonging to one Hurry Narain Mistree; had been affected in Cheyt (March) last. Had had hot skin, running from eyes, nose, and mouth; looked stupid; ears drooped; purged very offensive matter mixed with blood and mucus; off feed; great thirst; a few spots appeared on the body. In one or two places scabs had formed, and the animal is now in a very bad condition; is inclined to pick; two or three spots were observed, about the size of a 4-anna bit, without hair, and having in the centre a depressed cicatrix-like spot. The owner has no other cattle, and during the illness of the cow she was kept tied up in the house and not allowed to mingle with other cattle. Before the disease the

owner used to tie the animal by the road side, where there was *doob* grass, and did not allow her to graze about at will. At the time the cow took ill there was *bussunto* in the adjoining village of Eley. His house is not near *any other* house; waters the cattle in the pond close by. BURDWAN. Isolation of this case.

The villagers consider the disease to be infectious, as also *aishoo*. The cattle of the village graze in the fields, not on the road side. They are stall fed, and supplied with grass, straw, and *khullee*. The cattle are taken out to plough the fields in the morning at the cultivating season and let go at noon. There has been no small-pox in the village this year, nor any epidemic fever or cholera. Infectiousness. Feeding.

Village Bam, on the east side of the Grand Trunk Road. Visit to village Bam.

Contains about 225 head of cattle; no disease among them at present. Village stock.

Four or 5 years ago there was *gootee* in this village in the months of Falgoon (February) and Cheyt (March); about 15 head of cattle died. There is no *aishoo* or *puschima* at present here. Epidemic fever has prevailed for the last 3 years; men are still suffering, nearly 100 men having died. The people of this village have heard that *gootee* is raging much at Indosh on the south side of the Damooda near the Bancoorah road, 7 or 8 *kos* (14 from 16 miles) distant to Burdwan. There is a Moonsiff there. Rinderpest in 1866. Rinderpest at Indosh.

Mirzapore, visited 20th April 1870.

Three miles north of Burdwan, half a mile from Cutwa road; contains about 1,000 head of cattle; 300 houses, Hindoos; one family of Mussulmans; agricultural village; crop cultivated *amun dan*; no *bussunto* now; had it 5 or 7 years before (1272 B. S.) in Assar (June and July) and Shrabun (August); lost some 150 to 200 head; 3 or 4 years before they had another attack. They have it every 4 or 5 years; there are a few deaths yearly from *puschima*, *khoorah*, and other diseases; but when *bussunto* occurs, it affects a great number of cattle. Dead cattle are thrown on the fields, and the hides are removed by chamars, who in ordinary years do not sell them elsewhere, but in years of great loss of cattle hides are sent to Burdwan and elsewhere. No cattle are sold to *pikars* from this village. Cattle are sold by private bargain when wanted. There is no cattle market close. There is a *haut* at Kishnagur (64 miles) and at Paschandi (36 miles). Visit to Mirzapore. Village stock. Rinderpest in 1865. Loss. And about 1860 *puschima*, &c. Disposal of carcasses. Hides. Cattle trade. Markets.

Cattle are grazed on the fields on both sides of the village, and go towards the road They have had foot and mouth disease lately, but no deaths and no cases at present. Grazing. Foot and mouth disease.

Kamnara, visited 20th April 1870.

Saw a cow, apparently convalescent from *gootee*, was attacked with *gootee* a month ago had foot and mouth disease 10 days ago; very poor condition; very lame near forefoot, maggots; slight discharge from nose. On ribs, shoulders, and quarters most of the hair has come off, leaving bald black patches on the ribs. There is an old scab close to the sacrum, nothing on the udder; the ears are also bare, and cicatrix-like spots are seen on the back and on each side of the spine. Visit to Kamnara. Case.

This animal went with 200 or 250 other cows to Jhapurdah, close to Howrah, 60 miles off, 2 or 3 days' journey, for grazing. This is a common practice. The people are *goallas* and the pasture of their village is very bad, and they sell milk and graze their cattle at Jhapurdah. They went in Falgoon (February), and their cattle were attacked with disease, and 30 to 40 died among them, two belonging to the owner of the sick cow. This cow went with the rest and became affected, and was brought back; they generally bring the cattle back in June, but they brought them back sooner this year on account of disease. None died on the road back. Two or 3 sick were brought back. Since they came back no other case has occurred in the village. They returned 20 or 30 days ago. This is a *goalla* and agricultural village—all Hindoos, no Mussulmans. They had *bussunto* 5 or 10 years ago. Do not know how many cattle were lost then. Saw another convalescent cow in a neighbouring shed not quite so ill as this animal. No precautions have been taken to prevent the spread of disease throughout the village. Disease is bad in Bhogiria and Palitpore. No other villages about here adopt the custom of sending their cattle to a distance. *Pikars* don't come here to buy. History of outbreak. Rinderpest at Howrah, Feby. 1870. Previous outbreak. Case. Rinderpest in neighbourhood.

Evidence of ISSUR CHUNDER GANGOOLY, *Bood-Bood Sub-division, 19th April* 1870.

ISSUR CHUNDER GANGOOLY, of Colecole, Sub-division Bood-Bood, 6 miles to the north and east of Bood-Bood, 40 years old, says:—I am an agriculturist and owned 22 head of cattle before the outbreak, of which 4 were bullocks, 4 bulls, and the rest cows. On the 24th Falgoon (March), the disease known in this part of the country as *bussunto* appeared in my Stock. Rinderpest in March 1870.

BOOD-BOOD.

Loss. Second attack. Symptoms. house and killed 16 head of cattle, *viz.*, 4 bulls, 2 bullocks, 10 cows; another was attacked, but it got all right; the others had the disease 3 years ago, when it made its appearance. The symptoms of the disease are:—at first shivering for 3 days; the skin is hot, while the ears and horns are cold; from the 4th day there is running from eyes, nose, and mouth; off feed and drink; the tongue swells; the animal then groans and commences purging blood and mucus; it dies on the 5th or 6th day; the breath and the fæcal matter

Loss in money. are very offensive; I saw no eruptions on my cattle. I have lost Rs. 200 in 16 head of cattle.

Treatment. I got a book from my neighbour, and as directed therein gave internally infusion of chiretta, *kharee neemuck*, and asafœtida; I also made the infected animal inhale sulphur smoke each time for 10 minutes; I saved one bullock by using these medicines. There were nearly 500 or 600 head of cattle in my village, perhaps more; somewhere about 150 have fallen victims to *gootee*. I have seen eruptions on the bodies of cattle infected; I observed that hair had fallen off and scabs formed. This loss will interfere with my

Effect on cultivation. cultivation, for I shall be obliged with others to let a portion of my land in *bhag jumma*; I hold 36 beegahs of land. It has become difficult to get cattle in the neighbouring places, and

Price. their value has much increased, for the bullock worth 10 rupees ten years ago, costs now Rs. 20 and Rs. 25. We never sell cattle to the *Pikars*. Ours is a Hindoo village, but there are

Rinderpest in 1867. Mussulmans in it; the last attack 3 years ago was mild; there is still disease in our village.

Manure. We use the cowdung for fuel and for manure; the cattle of our village graze in the

Feeding. neighbouring fields and are housed and stall-fed during night; we give rice straw, *kholee*,

Rinderpest in 1862. *bhoosee*, and grass, also *conjee* or rice-water. About 8 years ago there was another outbreak of *gootee*, which was as destructive in its effects as the recent outbreak; *bussunto*

Infectiousness. appears in our village now and then. I and my fellow-villagers consider *gootee* to be an

Origin of disease. infectious disease; our cattle used to graze in the fields along with the animals of villages Poorsa and Paraz; in Falgoon last (February) the cattle of our village took

Sheep and goats. the disease from them; there are no buffaloes in our village, but we have sheep and goats; I did not, however, see any disease amongst them, but I have heard that sheep and goats have

Segregation. died of this disease. Separation of sick from healthy is beneficial, but at present we have

Treatment. no means of effecting this. I used to give the sick animals rice gruel and soft grass, but

Spread of disease. they could not eat anything. I cannot name any particular village that had the disease after our village had been attacked; but nearly all the surrounding villages got the sickness.

Puschima. *Puschima* appeared in our village 4 or 5 years ago; the cattle attacked, however, were few,

Symptoms. and it is not contagious; *the symptoms are purging, swelling of the throat, and death on the first day; there is no running from eyes, mouth, and nose; no sores in the mouth.*

Season. *Bussunto* appears in Pous, Magh, Falgoon, and Cheyt (December, January, February, and March); there are no particular seasons for *puschima*. *Aishoo* appears in the *rainy*

Foot and mouth disease. season and in Kartick (October) and Magh (January); the mouth and hoof become sore; it is not

Second attack. fatal; we have *aishoo* in our village now and then. One attack of *gootee* gives immunity from a second attack, as is found in my own case. I have not seen any animal recover from an attack of *puschima*, but I have seen one animal get two or three attacks one after the other; this year our village has been healthy as far as human beings are concerned.

Village Bheershenee, visited 20th April 1870, 6-30 A. M.

Visit to Bheershenee village. The village of Bheershenee is distant two miles to the east of Bood-Bood. 1. A bull

Case. calf two years old; ill four days; off feed and drink; profuse sticky discharge from nose and frothing from the mouth; no running from the eyes; excoriations on gums; tongue very much furred; purging clay-coloured watery stools, which were very offensive; the animal is shivering and the respiration is forced; coat staring; no eruptions to be seen, and breath very offensive; the owner is giving nothing for food and no medicine; this is the first attack in the owner's house.

Stock. The owner has 10 head of cattle, of which 3 are cows, 4 bullocks, and the rest bulls; the

Case. sick animal is kept in a separate room from the other animals. In another house saw a sick cow calf 8 months old; 8 days ill; picks a little; discharge from nose; coat staring; purging blood and mucus; sores around the rectum and vagina; no eruptions on the skin; no thirst; the owner gives the animal *conjee*; the mouth looked all right; the owner has 8 cattle, of which 6 are bullocks and 2 cows; no casualties; the calf is the only one that has been attacked; calf is allowed to go to her mother, which is all right.

Case. In another neighbouring house saw an old cow lying down with sticky discharge from eyes and nose, and running from mouth; ears drooping; coat staring; purging watery stools, which were very offensive; ill 5 days; off feed; has not been able to get up since yesterday; has forced respiration; no eruptions on the skin; does not ruminate; the owner is giving no medicine

Stock. and no food. The owner had 10 head of cattle, of which 3 are cows, 2 bulls, and the rest bullocks; the disease at first appeared in the owner's house in Falgoon (February) last, and killed 1 cow and 1 bullock; the third that was attacked was a cow, which has recovered; the 4th is the animal now sick; others have not yet got the disease.

Evidence of Villagers.

NUFFER CHUNDER GHOSE, BONMALLY GHOSE, GOOROO DASS GHOSE, KASHEE NAUTH CHUCKERBUTTY, of Bheershenee, say,—that this is a Hindoo village inhabited by about 150 families who own nearly 400 or 500 head of cattle; there are no sheep and buffaloes in this village, but there are goats. The bullocks form the greater portion; cows number 100 and calves the same, the rest are plough bullocks. The disease that has been raging in this place since Pous (December) last is called *bussunto*. The first case of *gootee* was in the house of one Nudder Chand Ghose, whose cattle used to graze in the fields along with the cattle of Khamargow and Noorkoona, where the disease was then raging violently; Nudder Chand lost 5 cattle one after another. The disease then went to the house of Shushy Coloo, 25 yards distant from Nudder Chand's place, and killed 1 cow belonging to him; it then indiscriminately attacked several houses in the village: the disease was most virulent in the latter end of Falgoon (February) and Cheyt (March). It is now on the decrease: the village has lost upwards of 100 head of cattle. The symptoms of the disease are,—that the animal looks stupid, gets fever, is off feed, purges, has sore mouth, running from eyes, nose, and mouth, and dies in 3 or 4, even 5 days; eruptions on the skin have not been seen; but in one case an animal which recovered was losing its hair in several places. No land, however, will be fallow on account of this misfortune, but it will be let in *bhag jumma*. Six or seven years ago *bussunto* appeared in this village, but then it was suspected that the *moochees* were poisoning all the cattle; the symptoms seen now were also seen then, and some *moochees* were seized in the act and sentenced by the Magistrate. We now think that the last outbreak was in reality one of *gootee*; about 50 head of cattle died in the last outbreak; the type, however, was not so severe as at present. The value of cattle has increased 50 per cent.; there are no cattle markets here. The people go about from village to village and make private bargains: sometimes the *Pikars* bring cattle from the north side of the Illoor river in the District of Beerbhoom and sell them to the people; they come at this season (Falgoon or Cheyt) (February and March) once annually, bringing a herd of 20 or 22 head of cattle. They do not purchase any cattle. If any one in the village wishes to sell cattle on account of poverty the villagers buy them up. There are cattle markets at Krishtonugger in the Beerbhoom District, at Pachondeher (Thannah Kutoogram, Sub-division Cutwa), and Bowalia in Beerbhoom. The butchers are often seen to pass by the Grand Trunk Road with herds of cattle bought in Beerbhoom, where there is a large number of cattle. Four years ago *puschima nara* appeared in this village in the house of Gooroodass Ghose and killed 10 head of cattle. The disease appeared in Jeyt (June). The disease did not go to any other house; the symptoms of *puschima* are,—swelling of stomach and throat, and purging blood; sore tongue; death in 2 or 3 days. *Gootee* is infectious, but *puschima* is not so. *Aishoo* is not fatal, and it is called *packai*. The attacked animal gets sore mouth and sore feet; calves die of this disease; it has appeared in the village from time to time. *Aishoo* appears in Magh and Falgoon (January and February). *Aishoo* is contagious. There was a mild outbreak of *gootee* last year in Magh (January) and it killed 20 head of cattle; the animals that got it last year and survived have escaped this year, although the disease has been in the house. An animal gets *puschima* twice and thrice, also *aishoo*. Have seen sheep and goats die of *gootee* this year; there are no *moochees* in this village, but the *moochee* of Bood-Bood, by name Khetoo, takes the skins; there is no *bhagaria jumma*. Khetoo sells skins to the *mahajuns*, who take them to Burdwan and Calcutta; the average price of a skin is Re. 1 and 1-4 a piece. Even the *moochees* take the meat of diseased cattle and sell it to the *Baoories*, who eat it. Beerbhoom is a great trading district.

Evidence of the villagers.
Village stock.
Origin of disease.
Progress.
Loss.
Symptoms of rinderpest.
Effect on cultivation.
Rinderpest in 1864.
Cattle poisoning.
Different type.
Markets.—Sales.
Cattle traders.
Markets.
Herds driven along Grand Trunk Road.
Puschima.
Symptoms.
Infectiousness.
Foot and mouth disease.
Rinderpest in January 1870.
Second attack.
Hides.
Meat of diseased cattle.

8-30 A. M.—*Dukinkhara, nearly two miles south of Bood-Bood.*

Saw a sick cow, ill 8 days, 10 years old; the animal is standing up, but looks miserable and very weak; there is profuse discharge from eyes, nose, and mouth (the people have applied turmeric to the nose and mouth); coat staring; feeds but little; will not eat by itself; purges blood and mucus, mixed with clay-coloured stuff; eruptions on shoulders and neck; the animal is shivering; the owner said that when he made the animal inhale *dhoona* (resin) smoke, some maggots came out; gives rice gruel; is drenched; this is the first attack in the house; has 85 cows, bullocks, and buffaloes; none else are attacked.

Visit to Dukinkhara.
Case.
Treatment.
Stock.

Saw in another house a cow 4 years old; condition fair; 6 days ill; does not eat of itself; is drenched with rice gruel; there is discharge from eyes and nose, and frothing from the mouth; eruptions on the skin under the hair; purging blood and mucus, very offensive; excoriations on the gums; tongue furred, and vagina highly congested—lined with viscid aphtha.

Case.

Saw in the same house a cow in fair condition, 8 years old, profuse discharge from nose, and running from eyes and mouth; coat staring; drenched with rice; hoven since last night; vagina congested, and contains slight, viscid, aphthous material; purged yesterday, but no purging since last night; no excoriations on the gum; a few eruptions are seen here and there; ill 6 days; turmeric applied to the nose; shivering.

Case.

In the same house saw another cow calf, 2 years old, ill 6 days; picks; looks better; slight discharge from eyes, nose, and mouth; purging blood and mucus; no eruptions on

Case.

BOOD-BOOD.

the skin; buccal membrane very much congested, and one or two excoriations on gums; vagina congested; condition fair. One calf in this house has recovered. The owner has lost 2 head of cattle, *viz.*, 1 cow and 1 bullock.

Evidence of the villagers.
Village stock.
Rinderpest prevailing.
Origin of outbreak from pounding of cattle at Amour.
Rinderpest in 1856.
No previous outbreak.
Puschima.
Symptoms.
Foot and mouth disease.
Hides.
Pikars (drovers).
Buffaloes subject to rinderpest.
Price.
Segregation.
Feeding.

TAFFIL AHAMMED and GOLAM SAFDAR say,—this is a Mahomedan village; all the people are agriculturists. There are 200 families in the village who own nearly 300 head of cattle and buffaloes; there are also sheep and goats in the village; *bussunto* appeared in this village 12 days ago; it appeared in the house of Harry Bagdy, who has lost 2 head of cattle; the sickness came from the village of Amour, which is distant 2 miles from this village, lying to the west side; the people of Amour, 14 days ago, had seized 7 head of cattle belonging to Gopaul Bagdy and Harry Bagdy, which had done damage to the Amour people's garden, and kept them there for 4 hours; these animals returned home and brought the disease; 2 of these cattle died; 8 head of cattle are ill now. 14 or 15 years ago there was *gootee* in this village; the oldest men do not recollect another outbreak of this disease; consider *gootee* as infectious; *puschima* appears in the village now and then; it is not infectious. It appears rarely and kills a few animals; *aishoo* also attacks the cattle of the village. The symptoms of *puschima* are,—purging, swelling of the throat, *hoven* and death in 2 days; *aishoo* is not fatal; there are no *moochees* in this village, but *moochees* from Doorgapore skin the dead animals in the *bazaar;* no poisoning; buy cattle from the neighbouring villages. *Pikars* come here from Beerbhoom with cattle for sale; they are not allowed to purchase any. Buffaloes have not yet been attacked. During the last attack buffaloes had the disease, but they recovered; only 1 died; do not know whether sheep and goats get the illness. The price of cattle has doubled. Segregation should be practised during plague, but in this part of the country there are no means of separating; the cattle graze during day, and are stall-fed at night. Some cattle are stall-fed day and night.

9-30 A. M., *visited the village of Bood-Bood.*

Visit to Bood-Bood village.
Case.
Evidence of villagers.
Rinderpest in January 1870.
Loss.
Infectiousness.
Origin of disease.
Rinderpest in 1860.
Arisen since construction of Grand Trunk Road.
Puschima.
Symptoms.
Foot and mouth disease.
Buffaloes.
Price of cattle.
Pikars (drovers).

Saw a cow 6 years old; sick 7 days of *gootee;* the animal is lying down and appears to be very weak; the body has become cold; there is running from eyes, nose, and mouth; purging mucus mixed with blood, and very offensive; off feed; drinks; drenched with rice gruel, and given green grass; hair standing on end; ears drooping; offensive breath; no excoriation on the gums; respiration healthy. There has been no loss in this house; two had the disease, but they have recovered. The people said that disease has appeared since Magh (January) last, and in the following Falgoon (February) several animals died. Nearly 100 head of cattle out of 250 died; the disease is considered to be infectious. Amour gave the disease to this village; the cattle of both villages graze together. The disease appeared 10 years ago and a few years before that period; the disease was before then unknown to this village, but it has appeared since the construction of the Grand Trunk Road 42 years ago, the village being 1½ beegah distant from that road; the sickness is on the decrease; the people know *puschima;* it appeared in this village last year, but the cases were few and the disease not so contagious; the symptoms are: swelling of the throat, purging, shivering, and death in 2 or 3 days. *Aishoo* attacks the village cattle now and then; there are a few buffaloes in this village; one buffalo died in Falgoon (February) last of *gootee*. Nearly 30 head of cattle have recovered; the value of cattle was nearly double; cattle are purchased in the neighbouring villages; the *Pikars* bring cattle from Beerbhoom and sell them; they do not buy cattle. *Pikars* frequently take herds of cattle to Calcutta by the Grand Trunk Road; they came from Beerbhoom.

Evidence of villagers of Deegnuggur, 11-30 A. M.

Village stock.
Losses.
Rinderpest in February 1870.
Symptoms.
Spread of disease.
Mortality.
Treatment.
Infectiousness.
Segregation.
Supply of cattle.
Markets.
Pikars (dealers).
Rinderpest in January 1870 in Bhaghee.
Origin of the disease.

DENO NAUTH MONDUL, NILKANTO MONDUL, NUND PAUL, NOBOCOOMAR GHOSE, JODOO PAUL, and SHIB NAUTH GHOSE, of Deegnuggur, 5 miles to the north-east side of Bood-Bood, say:—Our village is inhabited by nearly 1,000 families, consisting of Hindoos and Mahomedans; they owned before the cattle murrain 2,500 head of cattle or more, of which about 250 died of *gootee* in Falgoon and Cheyt (February and March); the disease is now on the decrease, but has not entirely disappeared; the disease first appeared in the month of Falgoon (February) in the house of one Deno Sing, who lost, one by one, 10 head of cattle. From Deno Sing's house the disease travelled to the house of Pitumber Roy, a neighbour, and scattered all over the village. The symptoms are,—shivering; looking dull and heavy; ears drooping; water running down from ears, mouth, and nose; coat staring; purging mucus and offensive watery matter; off feed; a little thirst. The animal dies on the 4th, 5th, or 6th day, and sometimes on the 7th or 10th day. Have known of cases ending fatally on the 2nd day; 25 per cent. of the attacked have recovered; gave no medicine, but drenched with rice gruel. Consider this disease to be infectious, and would separate the sick from healthy, if means were available for so doing. Get their supply of cattle from the Beerbhoom District and the neighbouring villages. Do not frequent any fairs or *hauts* for cattle. *Pikars* come to the village occasionally and sell cattle, as also purchase a few. The village does not stand close to any high road. In *Magh* last *bussunto* appeared in the village of Bhaghee, 4 miles to the west of the place. The people at the time of the disease went to cut wood through

this village, and it was in this way that their cattle got the disease. The people hope to buy fresh cattle, and thereby cultivate their lands. Have sheep and goats in the village. They lost 5 sheep from the *gootee*. No goats have been attacked. Some 5 or 7 years ago there was *gootee* in the village, but it was of a milder type than the present one. Do not recollect of any other previous attack. *Puschima*, in which there is a swelling of throat and hoven, appears in the village occasionally, but it is not infectious, and kills 1 or 2 cattle here and there. The disease *aishoo* was very common in the village, but it has never proved to be fatal. The symptoms are first sore mouth, and then sore feet. The cattle of this village graze during the day in the fields, and are housed and stall-fed during the night; the ordinary food allowed to cattle is rice straw, grass, oil-cake, *bhoosee* and rice-dust. Carcasses of cattle are thrown into *bhagars* and the *moochees* skin them. Are not aware of any cases of cattle poisoning. During the recent outbreak the *moochees* themselves lost several head of cattle. The cattle that could be had for Rs. 10 ten years ago sell now for Rs. 14 or 15. The number of cattle is being reduced owing to the destruction of cattle during plagues and by butchers. There are no Brahminee bulls in the village, but people keep bulls for serving cows. The Mahomedans castrate cattle at the age of 2½ years. There are pigs in the village, but the deponents do not know whether they get *gootee* or not. The cause assigned for the increase in price of cattle is the fact that they have become more scarce than before.

BOOD-BOOD.
Sheep and goats.
Sheep died of *gootee*.
Rinderpest in 1865.
No previous attack.
Puschima.
Foot and mouth disease.
Symptoms.
Feeding.
Disposal of carcasses.
Cattle poisoning.
Price of cattle.
Reduction of number of cattle.
Bulls.
Castration.
Pigs.
Cause of increase of price.

During the day the cattle are watered in the tanks. Paddy is the main crop in the village.

Watering.

Village Racona, 3 miles east of Bood-Bood, bordering on the Grand Trunk Road, visited 21st April 1870, 7-50 A. M.

Visit to village Racona.

A bull 8 or 9 years old; ill six days; condition poor; discharge from nose and mouth; excoriations on upper and lower gum, under lip, buccal papillæ, and aphthous deposits; off feed; thirst; offensive breath; dung hard and mucous; viscid discharge from urethra; no eruptions; pulse weak, 60; hair standing on end; animal weak. Case.

In another house a bull, age 8 or 9; six days ill; excoriations all over the gums; mouth very cold; tongue very much furred; discharge from the eyes, nose, and mouth; condition rather good; difficulty in breathing; nasal membrane tumid, excoriated, and covered with very viscid discharge; eruptions on dewlap and other parts of the body; purging. Case.

In another house a cow, 5 or 6 days ill; 6 teeth; condition rather poor; fever; mucous membrane of mouth generally, and especially at base of papillæ and vagina much congested; no eruption on the body; feeds little; no purging; pulse 72; coat staring. Case.

Another bullock belonging to the same man; 6 teeth; condition good; ill three days; feeding; eruptions all over the body; discharge from eyes, nose, and mouth; gums congested; hair coming off; buccal membrane congested; no purging; bowels rather constipated; fæces mixed with slime; pulse 68, small. Case.

A bullock belonging to another man; 4 teeth; ten or twelve days ill; offensive breath; picking; urine thick, highly colored; discharge from nose and mouth, but not from eyes; coat staring; buccal membrane congested; tongue very much furred; viscid discharge from urethra; still purging; fæces covered with mucus; rectum congested; one or two slight eruptions. Case.

Evidence of villagers.

Evidence of villagers.

NOBIN CHUNDER ODHICARY, RAM LALL SHIE, DHONE KRISTO MONDOL, TARINEY ODDICARY, and HARADHONE ODHICARY, of Racona, say,—that this village holds 150 families owning nearly 300 head of cattle, of which a ten annas portion consists of bullocks and the remaining 6 annas cows; there are only a few goats, but no sheep and buffaloes. Out of the number given the people have lost about 175 head of cattle from *bussunto*, which broke out in the months of Maug, Falgoon, and Cheyt (January, February, and March). The disease is on the decline, but there are a few cases; the disease first made its appearance in the house of the deponent Tariny Odhicary, who lost seven head of cattle. It then attacked the house of one Brojo Corpor, a neighbour, who lost three head of cattle. It then spread over the village indiscriminately. Four head of cattle of Tariney's recovered. The symptoms of sickness are—off feed, fever, forced respiration, running from eyes, nose, and mouth; in some cases eruptions on the body, purging blood and mucus; hair standing on end, and death in three to ten days. This village got the disease from the village Konderpoor, on the north side, distant half a mile. The cattle of both these villages grazed in the same pasture. Peary Shome, a fellow-villager, actually saw a *moochee* sprinkling (*goghasee*) fæcal matter taken from the bowels of dead cattle on the grass in the path through which the village cattle pass out.

Village stock.
Loss from rinderpest.
Rinderpest in January—March 1870.
Origin of disease.
Progress.
Origin of rinderpest.
Infected matter sprinkled by a moochee on the pasture.

In Magh (January) before last a *moochee* was seized in the act of cattle poisoning, and sentenced by the Sub-divisional Officer; the name of the *moochee* is not known. Carcasses are thrown into the *bhagar*, where the *moochees* skin them. Bunka, Hollodhur, and

Cattle poisoning.
Disposal of carcasses.

Bood-Bood. Hides. Effect on cultivation.

Interest charged by *mahajuns*. Infectiousness. Segregation.

Rinderpest in 1860.

No previous attack.

Supply of cattle. *Pikars* (cattle dealers). Price of cattle increased. Cause assigned. Supply of slaughter cattle.

Manure.

Puschima.

Symptoms.

Foot and mouth disease. Symptoms. Contagious. Second attack of foot and mouth. Second attack of rinderpest. Cattle poisoning. Convictions for cattle poisoning. Goats liable to rinderpest.

Symptoms of poisoning.

Spread of rinderpest.

Want of pasture land.

Breeding tract.

Gopal, *moochees* of Jharooba, take the skins; they carry the skins on carts to Calcutta, or sell them here to *Pikars*. They consider that the loss of cattle will interfere with the cultivation this year, and it is feared that a two-anna portion of cultivable area will remain fallow; many will hire ploughs and some will let in *bhag jumma;* a few will borrow money of *mahajuns* and buy cattle. The interest generally charged is 1 pice and 1½ pice and occasionally 2 pice to the rupee monthly. Cannot say how Kandeepore got the disease. Consider *gootee* to be very infectious. We know that separation of sick from healthy cattle may check the murrain, but have at present no meansof separating. Ten or 12 years ago there was *gootee* in the village, but that was of a milder type than this. Since then there was no *gootee*. Do not recollect of any previous outbreak. Get our cattle from Beerbhoom and Cutwa and from neighbouring villages. People go there for cattle, and sometimes *Pikars* bring cattle for sale; this is the season for the appearance of the *Pikars;* they do not purchase or take away any cattle from the village. The value of cattle has trebled from what was ten years ago. The cause of this is that the number is being daily reduced by death and knives. They frequently see large herds of cattle being taken to Calcutta by the butchers. The butchers get the majority of their supply from Laulgunge, Sub-division Raneegunge, Pergunnah Shergur, District Burdwan, and from Kristonugger in Beerbhoom. They also take cattle away from the villages about here. Cowdung is used for fuel and for manure; this is a Hindoo village containing Brahmins, Woogra Khettries, Telees, Bagdees, and Barbers; all castes are agriculturists. There is now and then *puschima nara* in this village; the deaths from this disease amount to one or two. *Puschima* appears in Maug and Pous (January and December), but may appear at other seasons; it is not contagious; the symptoms are, throat swollen, sometimes feet swollen; off feed; purging, and death in 2 or 3 days; 5 or 7 years ago there was *puschima* here. *Aishoo* appears in the village oftener, but no casualties occur; the mouth and feet of the cattle get sore, and then they recover. It is contagious; it is called *Bodal Khor*. *Puschima* cases are always fatal, and *aishoo* may attack one and the same animals twice and thrice. *Gootee* does not attack a bullock a second time. Have heard that *moochees* occasionally poison cattle, but never saw it. Do not know what poison is given. Have heard that some white stuff is wrapped up in plantain leaves and given to the cattle. Nobin moochee, of Poorgi, and Ramdhone moochee, of Shimnoree, were found guilty of poisoning cattle and convicted. The people consider the present disease to be *bussunto*, and not poisoning. No pigs in this village. Have seen 2 goats die of *bussunto*.

The symptoms of poisoning are,—purging blood, swelling of throat, and salivation from mouth. The poisoned cattle die within a few hours, and sometimes in 2 or 3 days. *Simool khar* (arsenic) is given. It is a white stuff. The disease has spread over the entire village, whether by the roadside or in the interior. No cattle of this village are sent to any distant place for pasture. There are no milkmen here. During the rains the cattle cannot graze in the field. The people have increased their cultivation, and the pasture lands have consequently diminished. Sold cattle in the year of famine. The breeding district is Beerbhoom, across the Moore river.

Evidence of Nobye Bhuttacharjee.

Rinderpest in Gor.

Nobye Bhuttacharjee, of Gor, 55 years old.—The village of Gor is 3 miles distant, north-east of Bood-Bood. There are about 7 or 800 houses in my village. I cannot tell the exact or even approximate number of the cattle, and I cannot say how many head of cattle died in the village. I own one cow, and that has been taken ill three days. The cow has got *bussunto*.

Evidence of villagers of Pootna.

Village stock. Loss from rinderpest.

Which still prevails. Origin of disease.

Individual losses.

Treatment. Manuring. Effect on cultivation.

Interest on borrowed money.

Jodu Nath Roy and Sham Churn Roy, of Pootna, 6 miles south of Bood-Bood.—Ours is a Hindoo village containing Brahmins, Kaists, Ogrokhettries, Goalah, and Bagdee; there are no Mussulmans in our village. Our village is purely agricultural. We have 100 families owning somewhere about 400 cattle, of which 50 are cows and the rest bullocks. Half the number has died of *gootee*, which broke out in our village in Cheyt (March). The disease is still very bad; it first broke out in the house of one Ram Kristo Goalah. I do not know how the disease came there, but I am aware of the fact that the cattle of our village graze in the common pasture along with many others belonging to neighbours, and that at the time there was disease in the village Sehore, half a mile distant from our place. The particular animal that was first attacked was turned out to graze with the rest; this man has lost the whole of his cattle, 8 in number. One of the deponents has 3 bullocks, of which 2 have recovered and 1 is still ill. The other deponent has 1 bullock, which is free from disease. Rice gruel and rice-dust mixed with water are given to the sick cattle. I did not allow it to drink water. The quantity I gave is 2½ seers to each animal. We have not yet commenced to plough; we are just manuring the fields. All the land will be tilled somehow or other. Those who have lost cattle will have to borrow money from *mahajuns* at the interest of 2 per cent. per mensem, buy fresh cattle, and till the land.

In the year 1269 there was an outbreak, killed about 400 cattle, seven years ago, and I myself lost 9 during that outbreak. On that occasion no land remained untilled. I had to borrow money to buy fresh cattle, and repaid the money in three years; but then I had to part with some of my landed property. I consider the disease to be contagious, but I have known instances of 1 animal being attacked amongst 7 or 10 which escaped; but we have no place where to remove the cattle, but if the place be provided we shall be very glad to do so. He has heard from his father that there had been occasionally one or two cases of poisoning, but the symptoms of poisoning are quite different from those of *gootee*, and I am able to distinguish the poisoning cases from the *gootee* cases.

Bood-Bood.
Rinderpest in 1863.
Contagiousness.
Segregation.
Cattle poisoning.
Symptoms different.

Evidence of Lallbehary Roy, *of Satmundy.*

Lallbehary Roy, of Satmundy, 18 miles north-east of Bood-Bood, lying within this sub-division.—Our village is inhabited by Hindoos, composed of Agoorees, Benyas, Brahmins, and Bagdees, as also Kaists and Bostaubs. There are no Mussulmans. The village people are mostly agriculturists and laborers. No carts in the village; our village is inhabited by about 1,000 families, and had 2,000 cattle before the disease broke out, of which nearly 1,700 have died. The disease commenced in Falgoon last (March), and declined 8 or 10 days ago. I have 2 or 3 cases now in the village. Our village got the disease from a village called Shomra, nearly a mile distant; our cattle and cattle of Shomra village have been grazing in the same fields. Some houses only have escaped. The reason is, that they have not sent their cattle to graze, but have kept them tied in their houses, only taking them out once or twice a day to a neighbouring tank for water. Some of the other cattle of the village are also watered there. The people have commenced purchasing fresh cattle from Pulitpore and other villages, and they hope to cultivate their land with this fresh cattle. Have not in my life ever seen another attack of *bussunto*. I have lost 9 head of cattle, and of the 4 remaining 3 had the attack, but recovered. They are paying from Rs. 12 to 16 for a bullock that cost before the murrain Rs. 10 only. All the people in the village are very much distressed on account of the loss of their cattle. Deponent came to Bood-Bood to register a bond in favor of his *mahajun* for capital borrowed for the purchase of cattle. He appeared greatly affected on the subject of the disease. The village has small-pox among men since March last, 1 having died; 4 are still ill.

Hindoo and agricultural village.
Loss from rinderpest.
Rinderpest in March 1870.
Origin of disease.
Escape of some houses
Reason.
Effect on cultivation.
History.
Increase of price.
Fresh purchases necessary.
Variola prevailing in Satmundy.

Evidence of villagers of Amoor.

Enyetolla and Derastolla, of Amoor, 2 miles west of Bood-Bood, inhabited by Hindoos and Mussulmans, principally by the latter.—We are principally agriculturists, but employ our cattle in carrying oats and *kunker;* the former from Raneegunge to Burdwan, and the latter from different other places. Our village is inhabited by 500 families. We have got about 600 or 700 head of cattle, of which 40 or 50 have died. The disease commenced in the month of January last. The disease at first broke out in the village of Myenpoor, 1 mile north of our village. It then came to the village of Shimore, half a mile north of our village, and from that village it came to our village by the cattle mixing with each other. I am aware of a house which entirely escaped, but can't say why. There will be no difficulty in cultivating the land. We never sell cattle; we buy cattle from neighbouring villages.

Agriculturists and carriers.
Village stock.
Loss.
Origin of rinderpest.
Progress.
Effect on cultivation.

Evidence of Banyram, *of Nusropore, dated* 21*st April* 1870.

Banyram Roy, of Nusropore, 12 miles south of Bood-Bood.

The disease appeared in this month; can't say how the disease came, though cattle graze with the cattle of Danorya village, and consider the disease to have come from there. Have not the means of separating the sick from the healthy, though we do separate in the same sheds. My village is 5 miles distant from the Grand Trunk Road.

Origin of rinderpest.
Segregation.

Evidence of Velayet Hossein, *of Khena, dated* 21*st April* 1871.

Velayet Hossein, of Khena, 10 miles east of Bood-Bood, on the Grand Trunk Road, inhabited by Hindoos and Mahomedans, particularly the latter.—The people are generally agriculturists; some are buyers and cartmen who carry their crop to Burdwan. Upwards of 40 cattle have died. We have 1,500 head of cattle. The disease is still raging, and the cattle are daily dying in twos and threes. The sick are not separated from the healthy; take no measures to stop the disease. I understand that separation is good, but we generally do not separate. The disease came from the village of Joykristopoor. The cattle of both the villages graze together; 1,200 head of cattle have died in Joykristopoor. Cultivation has not yet been fairly commenced from want of cattle. The people are afraid of this disease. In Ashar (June) last there was *gootee* in the village, but only 88 cattle were lost. It stopped at the commencement of the rains. Eight or 9 years ago they had the disease. The village stands near the junction station. There are no milkmen in the village.

Agricultural village.
Cartmen.
Village stock.
Rinderpest prevailing.
Segregation.
Origin of disease.
Loss from rinderpest.
Rinderpest in June 1869.
In 1862.

BOOD-BOOD.

Evidence of BAMA CHURN DUTTA, *of Anurpore.*

Village stock. Loss from rinderpest. Origin of disease. Hides.

BAMA CHURN DUTTA, of Anurpore, 5 miles to the south of Bood-Bood.—The village is inhabited by 50 families; they have about 150 head of cattle; 40 have died. The disease is still prevalent, but on the decline. Commenced 15 days ago. The disease first broke out at Neemdang and thence came to my village; Neemdang almost adjoins my village. There are 2 moochees in my village who make shoes and obtain their supply of skins from the villages of Bhegar and Bankora. They also take hides to sell to Calcutta.

Evidence of JADUBEENDOO MOZOOMDAR, *of Dooarmeree.*

Village stock. Loss from rinderpest. Origin of disease. Segregation. History. Effects on cultivation.

JADUBEENDOO MOZOOMDAR, 30 years old, and a Mooktear of the Bood-Bood Deputy Magistrate's Court, says,—that I live in the village of Dooarmeree, 4 miles to the south of Bood-Bood. Ours is a Hindoo village containing 30 families, who own 400 head of cattle. We have Kaists, Brahmins, and Sutgopes, but no Goalahs. Of this number we lost 40 in the village. The disease is still raging, and about 12 are still ill. The disease appeared at the latter end of Cheyt (April). I have lost 1 cow; 4 are still ill, and 5 have recovered. I cannot tell how the disease originated in the village, but I think that it came by our cattle mixing with the animals of the infected hamlets in the fields. The cattle of Noapoor, Omorpoor, Gowa, and those of our village graze together. Noapoor had the disease first. Noapoor adjoins our village, and it is 4 miles from the Grand Trunk Road. Whoever has 2 cattle-sheds separates the sick from healthy, but not those who have not 2 rooms. *Bussunto* appeared in the village thrice during the deponent's lifetime. Eight or 9 years ago there was *gootee*, but in that outbreak only 2 or 4 died. There was another outbreak some 15 or 16 years ago. Then, too, the deaths were comparatively few. Does not fear that the cultivation will be interfered with owing to the loss of cattle, but if the disease kills many more animals cultivation may suffer to a certain extent.

Evidence of KHETOO MOOCHEE.

Hides. Number of hides.

KHETOO MOOCHEE, 60 years old, an inhabitant of Bood-Bood.—I was born in this village and have lived here. I am an agriculturist, holding 5 beegahs of land, and I skin all the carcasses of cattle in the village of Bood-Bood. Lately I have been skinning the dead cattle at Bhegshini. I make shoes and *petarahs*, but I never sell hides to *Pikars*. I have to give shoes gratis to the village mondols, gomastahs, and chowkedar often. Since Pous (December) last I have been getting 20 hides monthly from Bood-Bood; I have 20 hides in store at home. I also prepare leather for yoking the cattle to the ploughs. There being a great demand for shoes and *petarahs*, I have not been able to sell any hides to the *Pikars*. I use salt, lime, and *amrah* fruits in curing the hides.

Visit to Oolooberiah Fair, 6th March 1870.

Rinderpest in Calcutta. Foot and mouth disease at Oolooberiah, &c.

In crossing the river Hooghly the ferryman informed the Commission that the Oolooberiah haut is not so thickly attended at present as it used to be, because the people of Calcutta will not buy cattle, as there is *gootee* (rinderpest) at Halseebagan, Kistobagan, Manicktolla, Simla, and Badoorbagan. He also informed that there was disease in the house of Bheem Maul of Kistobagan, Bonomally Dey, nephew of this man; also that there was *aishoo* (foot and mouth disease) at Oolooberiah, also at Rajeebpoor, Poojoolee, Acheepoor, Myapoor and Choramadar.

Oolooberiah. Market. Stock whence brought. To whom sold.

Oolooberiah is a village and police station of the district of Howrah, situated on the right bank of the Hooghly river, about 20 miles from Calcutta. Through it runs the high road to Midnapoor, Balasore, Cuttack, &c., and the entrance of the Balasore canal adjoins the village. A cattle, goat, and poultry market takes place here every Saturday, commencing at 7 and lasting all day. Cattle are brought here from the west and south, *viz.*, the districts of Midnapoor, Maunbhoom, Balasore, and Cuttack, and sold chiefly to the Calcutta goalahs and butchers. Small purchases of plough bullocks are also made by the ryots of the surrounding districts.

Cattle inspected.

On arriving at Oolooberiah the Commission called at the Police Office, and requested the Head Constable to render all the assistance in his power, which he willingly did.

The Commission then proceeded to the fair, and made a general inspection of all the cattle exposed for sale. There were about 400 head of cattle; about 70 per cent. were cows, both milch and barren, and 30 per cent. were bullocks. The cattle were generally of an excellent class, and in very fair condition. No animal could be called fat; many were very lean, and some extremely emaciated, but the barren cows brought for the Calcutta meat market were the best conditioned.

Cases of foot and mouth disease.

A careful inspection of each animal was made with the view of ascertaining whether any one was or had been the subject of disease. Only two diseased animals were found. These were cases of foot and mouth disease, both belonging to the same man, who had bought them about a fortnight ago at Bhudruck, in the district of Balasore (distant 90

miles from Oolooberiah), and exposed them for sale on this and the previous market day. In one case, said to be a fortnight ill, the hoof only was affected, a purulent discharge issuing from the cleft of both forefeet, and on the dorsum of the tongue a small patch—an old blister mark—was observed. OOLOOBERIAH.

The other case, alleged 8 days ill, had no affection of the hoof, but the tongue was very sore, and on handling it, one or two circular patches of cuticle came off, leaving a red raw surface. On the gum there was an excoriation, which on being cleaned was found to be slightly ulcerated; this was on the right side of the frenum, size 1 inch by ½ inch,* and the rest of the gum was quite healthy-looking. Mr. Hallen considered that from the appearance of this patch, it might be supposed to be more than simple foot and mouth disease, and even symptomatic of *gootee*, but on careful inquiry and close inspection no symptom of purging could be traced. The animal was in great pain, respiration accelerated, and there was a profuse discharge of viscid saliva from the mouth. The buccal membrane at the angles of the mouth was also much excoriated; there was also profuse sticky discharge from the nostrils.* Rinderpest.

A small bullock was seen with a single hoof on both forefect. The natives stated that they had seen similar cases.

Evidence of AKBAR MULLAH.

Akbar Mullah, Sirdar of the market, states:—I have been izaradar of the market for the last 14 years. The market takes place on every Saturday from morning to evening; it is a cattle, goat, sheep, and poultry market. Generally some 500 head of cattle, 40 to 50 goats, and 40 or 50 sheep change hands every market. These animals are brought from Orissa, Jehanabad, and Tumlook and the neighbouring places. The greater number of cattle comes from Midnapoor and Orissa, and Mundleghat Pergunnah. The sheep, goats, and poultry come from the neighbourhood. Of the cattle, bullocks constitute the greater portion; about 10 annas are male and 6 annas female; the male animals are 62 per cent., and 38 per cent. are brought for ploughing, for carts, oilmen, pack, &c., partly for slaughtering. The cows go to the butcher (barren cows) and dairies (milch cows); about half are bought for each purpose. These cattle go to Calcutta, principally to Diamond Harbour, to Howrah, to the new Sunderbund clearances, and other places. The price of cattle at present is as follows:— Evidence of Akbar Mullah. Number of stock exposed for sale. Whence brought. Destination. Present price.

Milch cows are sold for from Rs. 10 to Rs. 25, or Rs. 40—even Rs. 80, according to milk; barren cows, Rs. 3, Rs. 8, Rs. 10, Rs. 15; bullocks for Rs. 20 to Rs. 30, or Rs. 35. Formerly the price of cattle was much less; a cow that would 10 years ago cost Rs. ten now costs Rs. 15. All classes of cattle have similarly risen in price. During the Orissa famine the cattle were very cheap: the people parted with their cattle for money on very easy terms. The reason of the rise in price is, that cultivation has increased and the prices of necessaries have increased, especially of grains. The price of sheep and goats has likewise increased. Cattle coming to the market are grazed during the day and tied up in stalls and fed during the night. The villagers adopt the same system. Ten years ago. Reason of advance. Treatment of cattle. Food.

They get oil-cake, rice straw, and green grass; sometimes green grass is specially given to milch cows. The feeding of cattle costs more now than formerly; the pasture land is getting less in consequence of the cultivation increasing. No indigo cultivation has taken place for the last 40 years. The cattle are employed from March or April to August or September continuously; after that they have rest, except for winter crops, which are comparatively limited. Late paddy (*amun*) is the chief crop cultivated. The yield of the land is not so great as formerly, for want of inundation and irrigation, and therefore more land has had to be appropriated. The cows are mainly served by Brahmini bulls, some of which are let to wander about loose and others kept tied up by Hindoos—Brahmins; bulls are taken away sometimes to Calcutta. The cultivators keep more bullocks than cows; the goalahs more cows than bullocks. Not more than 2 or 3 in 20 cows are lost in ordinary years. At present foot and mouth disease is the only disease prevailing here. I have only seen *gootee* once in my lifetime in my village (in Bamtalla, close to Oolooberiah). Diseased cattle are very seldom brought to the market. I get 1½ pice for each cow brought to market when sold. Never saw a case of *gootee* exposed for sale in the market. I have seen foot and mouth disease frequently. I saw *gootee* last in my village about 20 years ago, and since then it has not prevailed in the fair; nine head of cattle belonging to me were attacked; 1 died and 8 recovered. Pasture. Uses of cattle. Soil and crops. Bulls. Ordinary motality. History.

Last year I did not notice that Diamond Harbour people bought more cattle than usually. Have seen *puschima*, which is a rare disease, and only attacks one or a few cattle. *Aishoo* goes over the whole flock, as does *bussunto*. Hides are removed by moochees; there *Puschima*. Hides.

* Cases of this sort have been noticed in England during the recent outbreak of foot and mouth disease.

OOLOOEBRIAH. is no *bhagaria jumma* here; there are about 4 deaths of cattle every month in my village, in which there are some 450 head; the hides are made into shoes or sent to the *karkhana* (agency houses) in Calcutta.

Cattle where purchased.

TEN PIKARS (CATTLE DEALERS) examined.—They go to Orissa, Mundleghaut, Midnapoor, and Tumlook; they purchase cattle from ryots; they bring sometimes 8, 10 or 16 head, and always sell here, and here only; they have sometimes to refuse to purchase sick cattle, but they have not heard of the existence of *gootee* this year. They never purchase sick cattle knowingly; they have never known of sick cattle being brought for sale by any inhabitants. The inhabitants of Tumlook, Mankoor, Mundleghaut, and Midnapoor breed cattle for the purpose of sale; all these men assert that they have never seen a case of *bussunto*, but have heard of its prevailing in Calcutta. They have frequently seen *puschima*. In this disease the stomach and throat swell, discharges occur from the eyes, nose, and mouth, and diarrhœa appears in some cases; cattle die in one or three days. This disease only attacks a few cattle at a time, and is not infectious.*

From J. R. HALLETT, Esq., *Joint Magistrate, in charge Midnapore,*—(*No.* 214, *dated* 28*th July* 1870.)

In accordance with the instructions contained in the Government Order No. 2777 of the 11th of December last, I have the honor to report for your information that small-pox is causing great loss amongst cattle in several places within the jurisdiction of the Police Station of Nundeegram in the Sub-division of Tumlook.

2. The accompanying tabular statement contains as much information as could be obtained on the several points mentioned in the Government letter above quoted; the disease appears to be on the increase, and unless some steps are taken to prevent it, it will undoubtedly cause great harm.

[REMARKS.—The tabular statement appended to this letter shows that the disease (small-pox) prevailed in one village of Pergunnah Jullamotta and 14 villages of Pergunnah Berhampore. It broke out in June, and of 694 animals attacked, 347, or 50 per cent., had died, 210, or 30·2 per cent., recovered, and 137 were still ill. The disease was considered to be infectious, and supposed to originate from a deficient rainfall, and consequent heat of the weather. The symptoms assigned to it are those usually given: pustules are described on different parts of the body, and swelling of the throat put down as one symptom. The average duration is said to be five days, and "no preventive or remedial measures are known to the owners of cattle."]

From J. P. GRANT, Esq., *Magistrate of Bancoorah,*—*No.* 18, *dated* 6*th January*, 1870.

In reply to your call, dated the 6th ultimo, received through the Commissioner of Burdwan, I have the honor to inform you that the cattle disease has existed in a mild form in this district during the last 3 years, the period during which I have been connected with it.

Until lately it has not been prevalent to such a degree as to call for any particular remark, but within the last two months it has been severely felt at a village called Jamjooree, about 8 miles south-east of this station.

I have obtained a report on the subject from the medical officer who visited the place with the object of examining the matter. I send you a copy of the report;† it is not exactly in the form prescribed by you, but it is sufficiently interesting and instructive in its present form.

† No. 1, dated 2nd Jany. 1870.

The disease prevails in a much lesser degree in other portions of the district, especially in that portion bordering on Manbhoom, but, so far as I can learn, it has not, except at Jamjooree, been exceptionally fatal.

I have, however, ordered the Police to be particular in obtaining and reporting information on this head; and as often as I hear from them of circumstances to which your letter applies, I will inform you of them.

From V. RICHARDS, Esq., *Civil Medical Officer of Bancoorah, to the Magistrate of Bancoorah,*—*No.* 1, *dated* 2*nd January* 1870.

I have the honor to report that I visited the village of Jamjooree, where cattle disease was reported to be prevalent.

I find that during the past two months 200 cattle have perished from the disease in the above village alone.

The symptoms appear to be the following:—

Refusal of food; inflammation and ulceration of the tongue and mouth; sometimes cracking of the feet.

* These men appear not to have given truthful evidence.

Running from the eyes and nose (coryza); either diarrhœa, or, as is most frequently the case, dysentery.

I found an eruption only on about 2 or 3 cattle out of 40 or 50 sick, and in all of these the pustules had taken on the process of ulceration and contained maggots.

Ulcers were mostly situated about the umbilicus; one of the eyes was frequently attacked, ending in its total disorganization.

There appears to be a practice amongst the Bowries, which should at once be forbidden, though I have not as yet noticed any serious result from it, that is, the use of deceased cattle as food. Whenever an animal dies, the skin is taken by a chamar and the carcass is handed over to the Bowries for food.

Cholera and fever have broken out at Bissenpore, where cattle disease is also prevalent. Such a practice is likely to be attended with serious results. I would therefore suggest that all animals dying from the disease should either undergo cremation or inhumation, or that, at any rate, the use of the carcasses as an article of food should be forbidden.

People in a village, to save their cattle when one of their stock is attacked, transfer the apparently healthy ones to some other village; the consequence is, the dissemination of the disease through the district, as these cattle, in which there is no appearance of disease, are often really undergoing the stage of incubation.

Could not something be done to prevent this?

All cattle should be prevented from leaving a village that is attacked by the disease. I am aware of the difficulty that would attend such a measure with the larger towns, such as Bissenpore, but I think a small village like Jamjooree might easily be subjected to such a regimen for a short time. Isolation alone can prevent the spread of the disease.

Abstract of Returns from Bancoorah received on 1st August 1870.

Thannah. Name and position.	Number of villages.	Name of disease.	Date of outbreak.	No. of cattle in villages.	No. attacked.	No. died.	No. recovered.	No. still ill.
Oudah ...	33	Bussunto ...	End of Dec. 1869	1,500	669	306	125	238
Bishenpore ...	4	Do. and puschima.	December 1869	3,500	3,000	2,500	500	
Gowrungdihi ...	2	Khoorah ...	Ditto ...	400	50	3	47	
Rugonauthpore ...	37	Pilloe, Bosonto Golakantaki, Pochamingla.	Ditto ...	14,491	9,047	7,096	1,951	
Chatna ...	...	.....	*Nil*					
Kaksa ...	8	Bussunto ...	April 1870 ...	1,871	623	561	62	
Nemapore ...	...	.....	*Nil*					
Bancoorah ...	...	.....	*Nil*					
Gungajulgati ..	4	Bussunto ...	December 1869...	1,014	135	50	85	
Raneegunge ...	28	Do., Pachao, Kurriah Doongra, Pilloe.	January 1870 ...	7,868	550	438	112	
Kotulpore ...	3	Small-pox ...	December 1869...	508	68	39	29	
Sonamookie ...	8	Bussunto ...	Jan. and Feb. 1869	1,016	67	52	15	
TOTAL ...	117	.....	.....	32,168	14,209	11,045	2,926	238

[REMARKS.—The disease most common and fatal is *bussunto*. The symptoms assigned to it are those usually given, eruptions and swelling of the throat occurring in some cases.

The spread of the disease is attributed in one case to the cattle of pilgrims conveying the disease, in another to those of travelling merchants, and in the rest to climate. Segregation seems to be adopted spontaneously by the villagers in some cases, but it happens that they carry with them cattle ill in the first stage, which subsequently sicken and spread the disease. The treatment seems to consist mainly of the administration of *congee*, rice gruel. Taking the sum total of all the figures given, it seems that during the last month of 1869 and first six months of 1870, in a stock of 32,168, 14,209, or 44 per cent., were attacked, and 1,045, or 34·3 per cent., died. The deaths per cent. of attacked were 77. Taking *bussunto* alone, out of a stock of 5,909, 1,562, or 26 per cent, were attacked, and 1,008, or 17 per cent., died. The deaths per cent. of attacked were 64. The mortality of *khoorah* was very small; in the instance where that affection alone is assigned, only 6 per cent. of attacked and ·7 of stock. It is difficult from the meagre description given to identify the other diseases mentioned.]

BEERBHOOM. *From* D. J. McNEILE, Esq., *Magistrate of Beerbhoom, to the President of the Cattle Disease Commission,—No.* 123 *T, dated* 18*th January,* 1870.

With reference to your letter No. 100 of the 16th ultimo, to the address of the Secretary to the Government of Bengal, I have the honor to report for your information that I have instituted enquiries throughout this district to ascertain the existence in any part of it of cattle disease.

2. The reports I have received show that in the south-eastern part of the district a few cases have occurred of two kinds of disease, one that which is so well known by the name of *bussunto,* and the other a foot disease called in this district *khoorah.* Neither of these, however, has assumed a form which can be called epizootic. They have appeared in one or two isolated places, and have not spread, and the mortality of such places has been very small.

3. Under these circumstances, I have issued orders that weekly reports shall be submitted from the part of the district to which I have referred, and, should any necessity arise, will communicate again with you on the subject. Four-fifths of the district are entirely clear of disease, and the part in which it has shown itself is the highest and driest tract in it.

CHOTA NAGPORE DIVISION,

COMPRISING THE DISTRICTS OF HAZAREEBAGH, LOHARDUGGA, MAUNBHOOM, AND SINGBHOOM.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch	...	... ...	Page 195.
Lohardugga.	Assistant Surgeon W. Dunbar, Dorunda.	13	20th March 1836...	Describes the *matah* prevalent in the district, p. 196.
	Col. E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.	96	14*th March* 1867 ...	*Selections, Bengal Government, p.*139. *Forwards a report from the Deputy Commissioner* in extenso.
	H. L. Oliphant, Esq., Deputy Commissioner of Lohardugga.	669	19*th October* 1866...	*Selections, Bengal Government, p.* 139. *Describes bussunto, khoorah, &c., and states that they are very prevalent in the district.*
	R. L. Forbes, Esq., Assistant Commissioner, Palamow.	111	17*th September* 1866	*Selections, Bengal Government, p.*149. *Describes sitlah, khoorah, &c., and states that they have been very prevalent in* 1864 *and* 1865.
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	1960	7th July 1869 ...	Forwards a letter from the Extra Assistant Commissioner of Palamow, p. 196.
	R. L. Forbes, Esq., Extra Assistant Commissioner of Palamow.	104	14th June ,, ...	Reports extensive prevalence of *matah* among cattle, and great mortality, p. 197.
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	2048	10th July ,, ...	Forwards letter from Extra Assistant Commissioner of Palamow, p. 197.
	R. L. Forbes, Esq., Extra Assistant Commissioner of Palamow.	164	8th ,, ,, ...	States that cattle disease prevails in Palamow throughout the year, p. 198.
	H. L. Oliphant, Esq., Deputy Commissioner, Lohardugga.	199	1*st February* 1870...	*Reports that no cattle disease prevails in the district.*
Manbhoom.	*Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.*	453	17*th March* 1864 ...	*Selections, Bengal Government, p.* 46. *Reports that cattle disease is well-known in all the districts of his Division, and yearly sweeps off large numbers of cattle.*
	Lieut. R. Money, Deputy Commissioner of Manbhoom.	172	11*th February* 1864	*Selections, Bengal Government, p.* 46. *Gives a statement of mortality in* 1861, 1862, *and* 1863, *and describes the disease bussunto.*
	Col. E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.	96	14*th January* 1867	*Selections, Bengal Government, p.*139. *Forwards detailed reports from all the districts of the Division.*
	Lieut. R. Money, Deputy Commissioner of Manbhoom.	915	22*nd December* 1866	*Selections, Bengal Government, p.* 144. *Gives a short history of cattle disease in* 1864, 1865, *and* 1866.
	Lieut. C. H. Garbett, in charge of the Deputy Commissioner's Office.	39	8*th January* 1870	*Reports prevalence of khoorah in several places and of bussunto in the town of Purulia and at Ambicanuggur and Simlapal.*

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Maunbhoom,—*contd.*	A. L. Clay, Esq., Deputy Commissioner of Maunbhoom.	49	9th January 1870	Report that cattle disease, *bussunto*, is always flying about the district, but has prevailed in the station of Purulia since December 1869. The civil medical officer describes the disease, p. 198.
	Baboo Woodoy Chund Dutt, Civil Medical Officer.	2	4th „ „ ...	
	A. L. Clay, Esq., Deputy Commissioner of Maunbhoom.	67 C	9th February „ ...	A further report upon the same outbreak of disease: the district generally said to be free of disease, p. 199.
	Baboo Woodoy Chund Dutt	27	16th „ „ ...	
	Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.	521	*7th March* 1870 ...	*Reports that, with the exception of Maunbhoom, the Division is free from disease.*
	A. L. Clay, Esq., Deputy Commissioner of Maunbhoom.	656	*3rd April* „ ...	*States that no epizootic exists in the district, and gives particulars of a slight outbreak of disease in one village.*
	Ditto ditto ...	1204	*16th June* „ ...	*States that no cattle disease exists in his district.*
Hazareebagh.	*Col. E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.*	96	*14th January* 1867	*Selections, Bengal Government, p. 439. Submits a report from the Deputy Commissioner* in extenso.
	Capt. H. M. Boddam, Deputy Commissioner.	631	*4th October* 1866 ...	*Selections, Bengal Government, p. 143. Describes the diseases mutah and khoorah.*
	Ditto Ditto ...	60	20th January 1870	Describe the widespread prevalence of cattle disease in the district towards the close of 1869 and at the beginning of 1870. The Civil Surgeon gives a careful description of the symptoms, p. 200. Page 203.
	Samuel Delpratt, Esq., Civil Surgeon.	26	14th „ „ ...	
	Capt. C. T. Hitchens, District Superintendent of Police.	21	13th „ „ ...	
	Lieut. Col. H. M. Boddam, Deputy Commissioner of Hazareebagh.	63	*24th January* 1870	*Report to the Commissioner the prevalence of disease in the district, (the same described in the preceding record).*
	V. T. Robertson, Esq., District Superintendent of Police, Hazareebagh.	28	*18th* „ „ ...	
	Lieut. Col. Boddam, Deputy missioner.	100	*3rd February* 1870	*A statement in Form No. 1 of cattle disease prevailing in Mouzahs Echak and Ooreyah.*
	Ditto Ditto ...	525	*15th June* 1870 ...	*States that cattle disease has died out.*
Singbhoom.	*Col. E. T. Dalton, C. S. I., Commissioner of Chota Nagpore.*	453	*17th March* 1864 ...	*Selections, Bengal Government, p. 46. States that cattle disease is well-known in the district.*
	Dr. W. H. Hayes, Deputy Commissioner.	201	*26th October* 1866...	*Selections, Bengal Government, p. 145. Describes the disease bussunto. States that it is very prevalent in the district.*
	E. T. Sillingston, Esq., Deputy Commissioner of Singbhoom.	467	*22nd December* 1869	*Reports that no cattle disease prevails in his district.*
	Dr. W. H. Hayes, Deputy Commissioner.	866	24th January 1870	Describes an unusual "epizootic" in Mouzah Dheerol, p. 203.
	W. Ritchie, Esq., District Superintendent of Police.	...	17th May „ ...	Describes a disease called *hotomo*, or swelling of the throat, in several villages, p. 203.
	Ditto Ditto ...	...	14th June „ ...	Reports prevalence of *Rog* in a village, p. 204.
	Ditto Ditto ...	...	25th „ „ ...	Reports the prevalence of *hotomotana* in several villages, p. 204.
	Ditto Ditto ...	...	27th July „ ...	Reports prevalence of *Rog* in Assoora, p. 204.

HISTORICAL SKETCH.

A very interesting account of *matah* among cattle in this Division was elicited by the Medical Board in 1836, by the circular printed at page 161. The account of it, written by Assistant Surgeon W. Dunbar, and printed in this appendix, shows that then, as now, an equally destructive murrain, apparently of the same nature, every two or three years ravaged the cattle of these districts.

1836.

Recent inquiry regarding the prevalence of cattle diseases was first started in 1864, and the result was that the Commissioner, Colonel E. T. Dalton, found that the disease *bussunto* was well known in all the districts of the Division, and "that every year large numbers of cattle are swept off by it." The most definite statement, however, is that given by Lieutenant R. C. Money, Deputy Commissioner of Maunbhoom. He states that *bussunto* is said always to have been in the district, and the deaths from it always to have been many; but for the last two or three years it is said to have raged more severely than formerly. In 1858, the Commissariat cattle in the station of Hazareebagh are said to have suffered from *matah*, and been treated without success with tartarized antimony.

1858.

In the year 1861, 22,661 cows and 7,701 buffaloes are reported by Lieutenant Money to have died of *bussunto* in Maunbhoom. The mortality in the same district in 1862 is returned as 26,032 cows and 6,293 buffaloes. The deaths in the year 1863 amounted to 18,098 cows and 54,459 buffaloes. In the year 1864 many cattle are said to have died in this district; and in the Palamow Sub-division of the Lohardugga District, where the disease called *sitlah* (rinderpest) is said always to prevail, "it increased to an alarming extent." Other diseases, *panja sota* (apparently a more virulent form of *sitlah*) and *khoorah* (foot and mouth disease) co-existed. Disease prevailed in Maunbhoom, but to a less extent; but in Palamow the severe epizootic which had begun in 1864 "continued with very little abatement till the end of 1865." Maunbhoom was visited severely in 1866, and the mortality is put down at 22,000. The disease seems to have spread over the greater portion of the district. *Matah* and *khoorah* are said to have been prevalent in the District of Hazareebagh during this year, but the particular localities visited are not specified; and in Singbhoom rinderpest is stated to have been very prevalent in the district. A graphic description of the disease is given by the Deputy Commissioner, Dr. W. H. Hayes.

1861.
1862.
1863.
1864.
1865.
1866.

No record exists of cattle disease in the Division in the years 1867 and 1868, but this, most probably, is owing rather to an absence of inquiry than to an absence of disease.

Towards the end of the year 1869 *bussunto* broke out in Purulia, and in the Pergunnahs Ambicanuggur and Simlapal in the Maunbhoom District, and very widely in the Hazareebagh District. Cases appear also to have been observed here and there in Singbhoom. A very severe outbreak of *matah* is reported to have existed in the Palamow Sub-division of the Lohardugga District. The disease commenced in February and lasted till June, and caused a mortality estimated at from 10 to 15,000 head of cattle. Another disease, not named, characterized by watery purging, vomiting, and death in a few hours, exactly resembling cholera, is also reported to have been prevalent. Small-pox prevailed among men simultaneously with *matah* among cattle. The officer reporting upon this outbreak states that cattle disease (*matah*) prevailed in the sub-division during each of the 5 years preceding 1869.

1869.

The Maunbhoom and Hazareebagh outbreaks continued to attract attention during the early months of the year 1870, but the disease did not spread widely. A few cases were from time to time brought to notice in the Singbhoom District, but the Commissioner, writing in September, reported that the Division was free of disease.

1870.

DISTRICT OF LOHARDUGGA.

Extract from the Records of the Bengal Medical Department.

LOHARDUGGA

From W. DUNBAR, Esq., *Assistant Surgeon, Dorunda, to the Superintending Surgeon, Dinapore Division,—(No.* 13, *dated* 20*th March* 1836*).*

I have the honor to acknowledge the receipt of your letter, dated March 1836, referring to the subject of variolous disease among cattle, and requesting me to forward to you any information I might have obtained upon the subject. Opportunities of observation may naturally be expected to occur at Dorunda, as a great part of the property of the inhabitants of this neighbourhood consists in the large herds of cattle which are daily sent out to graze in the immediate vicinity of the cantonment. I have the honor to lay before you the following few facts which seem to be pretty well ascertained and authenticated :—

A murrain called *matah* does exist among cattle.

I.—We may affirm with certainty that a disease called by the people here *matah* does attack the cattle in this district. Its ravages are occasionally severe and extensive, whole herds being sometimes nearly extirpated in a very short space of time.

Occurs every two or three years.

II.—From the inquiries I have made on the subject, I learn that sometimes two or even three years elapse without any appearance of the disease, or at least without its being found to exist either generally or in a malignant and aggravated form.

Symptoms.

III.—The following are the symptoms and appearances of the disease as described to me and partly observed by myself in the case of gun bullocks of the Ramghur Battalion, several of which suffered from the effects of this destructive epidemic :—Animals seized with this disease are observed to show an aversion to food, the eye looks heavy and dull, and the bullock shows every sign of having been attacked with some serious malady ; a small blister or vesicle is observed to form under the tongue, which soon becomes an ulcer ; other small ulcers are soon developed over the tongue and in the throat ; the abdomen in bad cases swells and becomes painful on pressure ; the animal is seized with a purging, first of watery slime, which as the disease advances becomes fœtid and assumes a dirty black appearance ; death

Mild cases.

generally takes place on the 3rd or 4th day after the development of the disease. In those bullocks which recover from the disease, I am informed that the ulceration of the mouth and tongue is less general than in bad cases, and that it does not spread downwards ; the abdomen is much less swollen and is not very tender on pressure ; the purging is usually slight, and does not present a foul putrid appearance ; towards the close of the disease in such cases, an eruption breaks out over the skin, of a reddish dusky colour, each spot or pustule being

Eruption.

about the size of a split pea. The eruption, as the animal gets well, generally disappears. All the gun bullocks which were seized and recovered had this eruption. I had no opportunity myself of seeing this, as all the gun bullocks which were attacked with *matah* during my stay at Kera perished, and in none of them was anything like an external eruption noticed. My information on this subject is derived principally from the Gun Sergeant of this Battalion—an intelligent man, who narrowly watched the disease throughout its progress, and communicated the result of his observations to me on the return of the guns to Dorunda.

Matah in Singbhoom.

The disease *matah* has been very prevalent and very fatal this year in Singbhoom and some of the neighbouring districts. I am informed that about Jamar and Boondoo immense numbers of cattle have been swept off. Since I received your letter I have visited several of the villages adjoining the cantonment, where large herds of cattle are kept, and find that the disease has not spread to this part of Chota Nagpore this season. I shall not fail to communicate to you the result of any further observations I may be able to make on this very interesting subject.

From Colonel E. T. DALTON, C. S. I., *Commissioner of the Chota Nagpore Division, to the Secretary to the Government of Bengal, in the Judicial Department,*—(*No.* 1960, *dated Chota Nagpore, the 7th July* 1869).

I have the honor to submit copy of a report* by Mr. Forbes, Extra Assistant Commissioner in Palamow, on cattle disease in that Sub-division, and bringing to notice that whilst the *matah* raged among the cattle, a bad type of small-pox broke out among the people.

* No, 904, dated 14th June 1869.

2. This was not previously reported, and the statistics now submitted by Mr. Forbes are not apparently based on the results of any proper system of inquiry.

3. Besides the *matah*, another disease resembling cholera attacked the cattle fatally in every case.

4. The disease was new to Palamow, and the description given of it does not tally with any that I have seen or recollect having read of before.

5. Mr. Forbes has been directed to collect and submit more accurate statistics, and to explain why the bad outbreak of small-pox was not previously reported.

From L. R. FORBES, Esq., *Extra Assistant Commissioner, Palamow, to the Deputy Commissioner of Lohardugga,*—(*No.* 104, *dated Daltongunge, the 4th June* 1869).

With reference to your memorandum No. 225, dated 29th April, forwarding Commissioner's letter No. 1149 of 26th idem, I have the honor to submit the following report on the cattle disease in the pergunnah.

2. I find that the disease commonly known as *matah* or small-pox has been prevalent to a certain extent throughout the year, and that this and the numerous other diseases which attack cattle in this district have created fearful ravages.

3. The *matah*, I find, began to assume an epidemic form in the early part of February, first showing itself as such in the Oontaree Tuppeh, from thence gradually spreading itself over the whole of the northern and eastern Tuppehs, gradually diminishing in force as it spreads southwards; the disease in fact seems, in the most extraordinary manner, to have confined itself entirely to those parts where distress prevailed, increasing in the violence of its attacks where distress was greatest, and decreasing in the same manner where distress was least felt.

4. The number of cattle that have been carried off may, I think, be estimated at from 10 to 15,000 head; and this I believe to be a moderate estimate, the people themselves fixing the number much higher, some at nearly 30,000.

5. As is usual, this disease among the cattle has been accompanied by a small-pox epidemic among the population of a very virulent type, and mortality has been very large.

6. I have not as yet succeeded in collecting very reliable information as to the extent of the mortality, but I trust to be in a position shortly to give as trustworthy statistics as it is possible to obtain. I believe, however, that I am not overstating it when I fix the number of deaths during the last twelve months at 2,000 souls.

7. I would here observe that small-pox is always present in Palamow throughout the year,—at least I have not known the pergunnah to be perfectly free during the five years I have had charge of the sub-division.

8. I now wish to describe another epidemic, for such I believe it may be called, which has made its appearance in the pergunnah among the cattle this year for the first time, and for which the natives have no name.

9. The symptoms are exactly those of cholera. The animal is suddenly attacked with a watery purging and vomiting,—not a foaming, it must be understood, but vomiting of actual food.

10. In half an hour, or one hour at most, after the attack, the animal lies down generally on the right side, apparently much distressed, and never rises again, death ensuing within two or four hours after the first attack.

11. When death is taking place the flanks seem to swell out, and as death comes on, the head is turned towards the flanks, the neck stiffening, so that the head after death remains in that position.

12. The most extraordinary feature in the disease is, that it broke out first in Tuppeh Oontaree, where distress was greatest, and appeared simultaneously with the cholera epidemic now prevalent.

13. It appears to have attacked but few villages, but to have carried off all cattle in whatever village it made its appearance.

14. From Oontaree it appears to have travelled south and eastwards, attacking villages here and there *en route*, in exactly the same way as the cholera has done.

15. Thakurai Juggernath Dial, of Chainpore, reports that the disease is now amongst his cattle to the south, creating great ravages. I would add that the disease is not confined to the bullocks and cows, but that numbers of buffaloes there also have been carried off.

[*Qy. Was this "Cholera" cattle poisoning ? C. P. C.*]

Memo. from COLONEL E. T. DALTON, C. S. I., *Commissioner of Chota Nagpore,*—(*No.* 2048, *dated the 16th July* 1869).

Copy of the following submitted through the Secretary to the Government of Bengal, Judicial Department, in continuation of this Office No. 1960 of the 7th instant, for information of Government.

PALAMOW.

From L. R. FORBES, Esq., *Extra Assistant Commissioner, Palamow, to the Deputy Commissioner of Lohardugga,*—(*No.* 164, *dated* 8*th July* 1869).

With reference to your No. 728, dated 3rd instant, I have the honor to report that I did not report the existence of small-pox because it was not a sudden and unusual occurrence. Small-pox is present in Palamow throughout the year, with more or less fatal effects.

2. The number of deaths stated by me was not the result of any accurate information; I only stated the number approximately; besides, even supposing the number mentioned by me to have been correct, the mortality, only 1½ per cent., could not be considered anything very extraordinary, since it extends over the whole year.

3. Had the epidemic appeared suddenly, and the extent of mortality mentioned occurred within a short period, I should certainly have brought the matter to your notice.

DISTRICT OF MAUNBHOOM.

Maunbhoom.

From A. L. CLAY, Esq., *Officiating Deputy Commissioner of Maunbhoom, to the President, Cattle Disease Commission, Calcutta,*—(*No.* 49, *dated Purulia,* 9*th January* 1870).

I have received instructions from the Commissioner of Chota Nagpore to supply you with information called for in your letter to the Secretary to the Government of Bengal, Judicial Department, No. 100, dated 6th ultimo.

2. I now write to inform you that an outbreak of cattle disease has recently been reported in Purulia, the sudder station of this district, and I have requested the Civil Medical Officer to give the matter his personal attention, in order to enable me to furnish you with the fullest and most accurate information possible. I enclose copy of his preliminary report just received, which touches upon most of the points mentioned in your letter above referred to. The final report promised by the Medical Officer on cessation of the epizootic will be submitted on receipt.

3. The cattle disease known in the vernacular as *bussunto* is always flying about the district among the villages in the interior, but as it is difficult to obtain trustworthy information from these remote localities, I have thought it better to confine my present inquiries more especially to Purulia.

From BABOO WOODOY CHUND DUTT, *Civil Medical Officer, to the Deputy Commissioner of Maunbhoom,*—(*Dated Purulia,* 4*th January* 1870).

I have the honor to acknowledge the receipt of your letter No. 2340, dated 29th ultimo, with enclosure, on the subject of cattle disease.

In reply, I beg to report that from my enquiries it appears to me that cattle disease has been prevalent in this station since the commencement of last month. The poorer classes of people are so indefinite in their ideas of dates, that I have not been able to ascertain the exact date of its origin or the first house in which the disease broke out.

With regard to the questions propounded by Mr. Hallen, V. S., I beg to furnish the following information regarding the present outbreak of cattle disease in Purulia.

Locality. 1*st.*—The disease is at present confined to either side of the road leading from the bazaar to Buchabund.

Name of disease. 2*nd.*—The disease is called *gobussunto* by the natives.

Date of outbreak. 3*rd.*—The exact date of outbreak cannot now be ascertained. It has no doubt existed since the commencement of December last.

Statistics. 4*th.*—The number of cattle attacked up to 31st December is reported to be 91. Of these, 23 (25·2 per cent.) are said to have fallen victims to the disease, 55 to have recovered, and 13 to have been still ill on the above date.

5*th.*—The total number of cattle in the town of Purulia is said to be 2,498.

Infectiousness. 6*th.*—I believe the disease is infectious, and will yet affect a large number of cattle. It is, I think, gradually extending in all directions.

7*th.*—I have no positive information as yet as to the mode in which the disease first originated.

8th.—The disease first shows itself by shivering, erection of the hairs of the skin, disposition to stand quietly at one place, and refusal of food. Heat of skin and watering from the eyes and mouth very soon follow. The hot stage or fever lasts for 3 or 4 days, when the skin cools down again, and diarrhœa or thin stools set in. In favourable cases the diarrhœa is mild. The stools are feculent, dark coloured, and thin. The looseness lasts for 3 or 4 days, when the fæcal evacuations again become consistent, the animal takes its food, the discharge from the mouth and eyes ceases, and convalescence is established. In unfavourable cases the diarrhœa gets worse. The evacuations become quite watery with shreds of mucus floating in it, or they are stained with blood. They are passed frequently and with great force. The discharge from the mouth becomes thick, purulent, or sanious. Ulcers form in the tongue, gums, and lips. There is difficulty of swallowing and laboured breathing. The mouth, lips and throat swell. The animal is unable to get up and becomes exhausted; death follows in from 9 to 12 or more days. In one instance that I saw, abortion resulted in an animal labouring under the disease. MAUNBHOOM. Symptoms.

I have not noticed any eruptions on the skin or feet. In one calf only a small red crack was seen in a hoof, the nature of which remains to be ascertained. Some owner of diseased cattle informed me that during the febrile stage of the disease small hard bodies can be felt on the skin by the fingers. I could not, however, perceive them in the two animals I tried. Eruptions on the tongue, gums, and lips were noticed by me in many cases, and in one bad case ulcers and worms had formed in the mouth. I have as yet seen about a dozen cases only, and I reserve further details on this subject till the end of the epidemic, when I hope to furnish you with a full report on the subject. Eruptions.

From A. L. CLAY, Esq., *Officiating Deputy Commissioner of Maunbhoom, to the President, Cattle Disease Commission, Calcutta,*—(*No.* 67C, *dated Boorda,* 19*th February* 1870).

In continuation of my letter No. 49, dated 8th January 1870, I have the honor to submit herewith copy of the Civil Medical Officer's final report on the subject of the cattle disease lately prevalent at Purulia, with form of questions (No. 1) duly filled up.

2. The disease appears to have been confined to comparatively few cases, and scarcely to have deserved the name of an epizootic.

3. From inquiries I have made while out on tour in my district lately, I am inclined to think that the cattle disease is not generally prevalent at this season, though individual cases occur here and there.

From BABOO WOODOY CHUND DUTT, *Civil Medical Officer, to the Offg. Deputy Commissioner, Maunbhoom,*—(*No.* 27, *dated* 16*th February* 1870.)

In compliance with the request contained in your letter No. 2340, dated 29th December last, I have the honor to submit herewith my final report on the epidemic of cattle disease which prevailed here in December last.

I am happy to state that since my first report to you on the subject, dated 4th January, there has been very little disease amongst cattle in this town. The District Superintendent of Police reports that only one head of cattle was attacked and died during the month of January in the town of Purulia. On the 4th January I got ready a shed for the reception of diseased cattle. Up to the 9th seven animals were admitted for treatment. Of these, two died and five were discharged cured. The last animal was sent out on the 28th January last, when the hospital was broken up. cattle hospital.

From the small experience I had of the epidemic since my last report, I have nothing to add regarding the symptoms of the disease to what I stated before on the subject.

With regard to treatment, I ordered two prescriptions to be used, one in the febrile stage, and the other in the stage of diarrhœa. These were as follows :—

Seven leaves of the *muddar* plant and 21 black peppers to be ground together and given at the commencement of the disease. This medicine is much used by some of the natives, and from my knowledge of its properties, I consider it a useful febrifuge and diaphoretic.

In the second stage of diarrhœa, the following prescriptions were used :—

Kuth or catechu	½	tolah
Opium	½	"
Congee water	1	seer

This is useful in restraining the drain from the intestinal canal.

MAUNBHOOM. The hospital was opened in a shed in front of the charitable dispensary, and every arrangement was made for the food and care of the sick animals. A servant was engaged at Rs. 5 per mensem to look after the cattle. Between this man's pay and bazaar medicines an expenditure of Rs. 5-15 has been incurred, for which amount a bill is herewith submitted for payment. The cost of feeding the animals has been recovered by me from their owners.

[The appended statement shows 101 cattle attacked, 27 deaths (26·7), and 94 recovered in a stock of 2,498.]

DISTRICT OF HAZAREEBAGH.

Hazareebagh. *From* LIEUT.-COL. H. M. BODDAM, *Deputy Commissioner, Hazareebagh, to the President, Cattle Disease Commission,—(No. 60, dated 20th January* 1870).

With reference to your letter No. 100, dated 6th December 1869, to the Secretary, Government of Bengal, I have the honor, in accordance with the instructions of the Commissioner of Chota Nagpore, to forward for your information copies of letters as per margin.

No. 21, dated 13th January 1870, from District Superintendent of Police.
No. 26, dated 14th January 1870, from Civil Surgeon, Hazareebagh.

With reference to the letter from the District Superintendent of Police, I may say, once for all, that the information given by the Police as regards numbers of cattle attacked and died is unreliable, but it shows the extent over which cattle disease prevails, as Jorie is on the west, and Kusmar is on the east of the district.

Cattle disease of a minor or less virulent type prevails throughout the district, and generally throughout the year; the inhabitants are, however, an ignorant, illiterate race, and generally call every disease either *matah*, small-pox, or cholera, and no attempt is made by the owners of the diseased cattle to cure them by the exhibition of medicines, nor even will they, unless compelled, attempt segregation.

A few of the *goallas* pretend to know how to treat some of the diseases, but their remedies are found to consist in the use of *ghee, huldee, karee nimuck,* and the cautery.

When the inhabitants of a village in which cattle disease prevails are questioned as to symptoms, all they can say is that the animal is violently purged and dies in a short time. Even those who admit that they have lost half their herd of cattle, cannot give any decided opinion regarding the symptoms of the disease, stating, when questioned as to whether there were eruptions on the body, sometimes yes, and sometimes no; could not say whether the eyes and mouth watered or not,—thought they did sometimes; body sometimes cold, sometimes hot; and so on with regard to any questions put to them.

From S. DELPRATT, Esq., *Civil Surgeon, Hazareebagh, to the Deputy Commissioner, Hazareebagh,—(No. 26, dated 14th January* 1870).

I have the honor to inform you that, in accordance with the instructions contained in your paragraph 1 of letter No. 3 of 3rd current, I visited on the 12th and 13th instant the town of Ichak and the village of Ooreyah, and instituted enquiries on the subject of the disease lately prevalent amongst cattle in this district. I collected my information as far as possible under the headings given in the letter No. 100 of 6th ultimo, from the President of the Cattle Disease Commission, which you were good enough to transmit to me, and I now give you the result for each place in separate forms, contrasting the two in a subsequent paragraph.

II. 1*st.*—District Hazareebagh, town of Ichak.
Locality.
2*nd.*—Disease called by the natives here *haiza.*
Name of disease.
3*rd.*—First observed in the first week of December last.
Date of outbreak.
4*th.*—Number attacked said to be 300.
Statistics.
5*th.*—Deaths among the above 100—33 per cent.
6*th.*—Recoveries said to be 200—66 „
7*th.*—Two still ill; they are nearly recovered.
8*th.*—The town is said to contain 1,600 cows and buffaloes.
9*th.*—The native cowherds do not think the disease infectious.
10*th.*—No one knows in the least how the disease originated.
Symptoms.
11*th.*—*Primary symptoms.*—The animal refuses all food and grass, but drinks eagerly, and generally shows signs of being "out of sorts;" no particular attention is paid to this, until, however, it is noticed that the animal shows the following signs of sickness:—drooping of the ears, watering of the mouth, eyes, and nose, which induces the owner to examine the mouth, when the tongue is found redder than usual. As the disease progresses, this congestive state increases, sores break out on

HAZAREEBAGH.

the tongue and fauces, and in the course of 24 hours purging sets in, which lasts for 2½ days, when, if not controlled, the animal dies. If the purging passes off, the animal experiences relief of the symptoms of the mouth, &c., and the appetite gradually returns, and the beast is able to eat soft food, such as boiled *oorudh* and soft grass, but his strength is always much reduced by the illness, from which he but slowly recovers. The appearance of the coat is said to be natural throughout. No eruption is to be seen on any part of the body or feet; eyes, nose, and mouth watering throughout the whole period of the severe symptoms. Body hot, mouth and tongue and breath *very* hot and watering; head also hot, nose and ears cold, breathing labored; no cough at any stage of the disease; no shivering fit nor swelling of the throat; urine excessive in quantity and high colored, but never bloody. The fæcal evacuations are first the last food eaten, passed in an undigested state, then watery motions with streaks of blood. If this continues, the animal dies in about two days; if the motions become less in frequency and quantity, it is a good omen. Sometimes mucus is also passed with the evacuations.

12*th.*—Average duration of attack said to be 60 hours.

Treatment.

13*th.*—No remedy for this disease is known. Great faith, as usual, is placed in *poojahs* to the goddess *Kali*, with *incantations by distinguished Brahmins.*

Locality.

III. 1*st.*—Village Ooreyah, Pergunnah Champa, District Hazareebagh.

Name of disease.

2*nd.*—Disease called here by the natives *beadh.*

Date of outbreak.

3*rd.*—First appeared six weeks ago.

Statistics.

4*th.*—Ninety-one attacked.

5*th.*—Sixty-one deaths (67 per cent.) The account had been kept by tying a knot in a piece of string for each death. This string was shown and counted in my presence.

6*th.*—Thirty cases recovered (33 per cent.)

7*th.*—One case still ill.

8*th.*—Five hundred head of cattle in the village.

9*th.*—The natives consider it infectious, but have not tried the effects of segregation.

10*th.*—Origin utterly unknown.

Symptoms.

11*th.*—Primary symptoms are a general state of malaise and disinclination for food for three days, then watering of the mouth, eyes, and nose. On opening the mouth, sores are seen on the tongue, palate, and fauces, extending downwards into the throat; drooping of the ears; diarrhœa then sets in; the ordinary motion looser than usual, succeeded by watery bloody stools, which are ejected with great force, and come out, as the natives described it, as from an enema—*pichkari*, the liquid evacuations being deposited or dropped at some distance to the rear, or where the animal may be standing. There are also coagula of blood passed with the motion, and sometimes there is mucus mixed with the stool. The coat is described as being rough; no eruption noticed in a single case; eyes, mouth, &c., watering; body, ears, mouth, and surface of body all cold. In every case there is labored breathing, but only in some (and these are the cases which recover) is there cough, which is consequently considered a favorable symptom; shivering fits in some cases, but this is a dangerous symptom, as all those animals in which it has been experienced have without exception succumbed to the disease; no swelling in the throat; fæcal evacuations are as above described; urine thick, resembling mustard oil, and scanty in quantity.

12*th.*—Average duration of the attack before death or dissolution, uncertain. In some cases it has been rapidly fatal, death occurring within twenty-four hours; one animal was said to have died in twelve hours; in other instances, the disease has taken one, two, three, five, six, and even as long as twelve days before terminating fatally.

Treatment.

13*th.*—No remedy is known, nor has any medicine been administered; sacrifices of goats to *Kali* and *poojahs* have been made, but without any favourable response having been vouchsafed by the goddess.

HAZAREEBAGH.

IV. In pursuing these investigations, I have called to my assistance the principal cowherds of each place, and the information given above, as regards symptoms, &c., has been derived from what they have witnessed amongst the infected cattle. It will be noticed how greatly the symptoms differ in the two places. The name even of the disease is different in the two localities. The rate of mortality, comparing the two places, is striking: at Ichak, one-third only of those attacked died and two-thirds recovered; at Ooreyah the tale told is exactly the reverse—two-thirds died, while only one-third recovered. I confess that I much distrust the returns given for Ichak, whilst I put more faith in the numbers as furnished at Ooreyah, where the information elicited was given in the most simple and primitive manner; for instance, the number of head of cattle in the village was shown me by the presentation of twenty-five small pieces of gravel, each of which, I was told, represented a score. Thirty particles of goat's dung placed carefully in the palm of my hand showed the recoveries, and the knotted string clearly proved that regular count had been made of the terrible mortality.

Discrepancies.

Village register.

One man told me he had 19 animals attacked, all of which died. Another had fortunately lost only two out of six infected by the disease. At Ichak, on the contrary, the numbers were arrived at by the despatch of some twenty municipal police and peons through the town for the collection of information on this point. As they returned to me in the course of one hour and a half, having been supposed to have traversed and made inquiries at every house in a large city in the interim, I look with great suspicion on the statistics furnished by them, more especially as, during their absence, I questioned the man who seemed to be considered the chief among the *goallas* respecting attacks, recoveries, and deaths, and he informed me that of the seven wards into which the town is sub-divided, the one of which he had information more particularly, he reckoned to have had 150 cases, the great majority of which had ended fatally. This statement might possibly have been exaggerated, but I cannot help thinking that the report of the local police must have been underestimated, reference being had to the perfunctory manner in which the duty of collecting facts was performed.

Ichak statistics unreliable.

V. Regarding the great difference in some of the symptoms at the two places, it must be remembered that the information on all these somewhat minute points was derived from unlearned and timid men, that it was very difficult to glean anything on some points, and if a leading question were put, the man at once jumped to the conclusion that the *huzoor* must require an answer in the affirmative, and replied accordingly, being backed up, as a matter of course, by the others standing-by; but allowing for this, it would appear, by comparing the statements of the two places, that in each the disease is ushered in by similar premonitory symptoms, such as a state of general malaise, disinclination for food, drooping of the ears, &c., all showing the animal to be not in ordinary health. This state is succeeded by characteristic symptoms, clearly indicating the onset of actual disease, and these symptoms are accurately and similarly described at both places, *viz.*, the watery discharge from eyes, nose, and mouth, the aphthous spots on the mucous membrane of the mouth and fauces. Both places are also in accord on the point of the non-appearance of eruption on any part of the body; and the generally rapid supervention of diarrhœa culminating in the bloody flux, in some cases mixed with mucus, is most faithfully recorded in both localities. All this leads me to the conclusion that the disease is identical in both places. The difference in the anal secretion is only in the matter of quantity (character alike in both), which in one is excessive, and the other scanty; the cough in one place, which is considered a good augury, and no mention of this symptom in the other, are points on which natives may differ without attaching, in their case, much importance to their diversity of opinion; but the question of the temperature of the body, and especially of the mouth, which latter both remark on as being the seat of specific inflammatory action, being a matter on which the two places are so diametrically opposed, is a subject of some surprise to me, and which I find it difficult to reconcile, even in the case of Native opinions. Regarding rigors, while this symptom is said never to have been remarked at Ichak, it is mentioned, as in some cases, and those the most fatal, to have been witnessed at Ooreyah, and in the only case I have seen at this latter village, the animal had a distinct fit of shivering in the earliest stage of the disease.

Discrepancy in symptoms.

Comparison of symptoms.

Diseases identical.

With reference to the question of "infection," the opinions differ at the two places. Baboo Kalidas Palit, at Ichak, the intelligent manager of the Ramghor Estate, informed me that when the disease first appeared among the estate cattle, he separated those that were sick (4) from those that were healthy, sending the latter away to a distance of three miles from the city, and that the disease did not show itself amongst the animals after their segregation. On the other hand, a native named Bakonrie, stated,—"I had seven cows kept in *one* house. One was attacked in the morning—violent purging with blood and mucus and died the same evening. None of my other cows suffered." Another native, Santoki, affirmed,—"I had twelve cows confined in *one* house; four were attacked with this

Infectiousness.

Segregation.

Effect.

disease. I gave no medicine, but I offered a kid to the goddess *Kali*. One of the animals, a calf of seven months old, died, the other three full grown animals recovered, and none of my other cattle were affected."

Conclusion.

VI. From my slight experience of diseases of the lower animals, I am rather diffident in pronouncing an opinion of my own on the subject, but being asked to do so, I would observe that, from the peculiar symptoms of the disorders, I am inclined to characterize it as an exanthematous eruption. I should in the preceding paragraph have remarked that the chief *goallas* I consulted at Ichak told me that though they meet with disease amongst the cattle annually, yet they had not seen this special type of disease for the last seven years, in which year a disease exactly similar in symptoms, attended with excessive mortality, prevailed in the town.

VII. With reference to your request for an expression of opinion from me as to the necessity of the Cattle Disease Commission visiting this district, I think it would be better, not knowing the engagements of the Commission in other zillahs, that the question of visiting these parts or otherwise should be left to their discretion after reading the local reports on the disease; at the same time bearing in mind that the facts I have above laid before you are gleaned from the information derived from only two places near Hazareebagh, and that the disease is supposed to prevail rather extensively in many other parts of this district.

From CAPTAIN C. T. HITCHENS, *District Superintendent of Police, to the Deputy Commissioner of Hazareebagh,—(No.* 21, *dated* 13*th January* 1870*).*

With reference to your office memorandum No. 1090, dated 29th ultimo, I have the honor to forward replies to as many of the questions contained in the Government Resolution forwarded therewith as can be ascertained from this office record.

Names of places.	Dates when the disease broke out.	No. died.	Nature of disease.
Jooree in Chuttra	12th November 1869 ...	1	Small-pox.
Sindooar „	5th „ „ ...	2	Ditto.
Ooria (Hazareebagh)	4th December „ ...	33	Bowel complaint.
Echak „	5th „ „ ...	4	Ditto.
Silwor „	8th „ „ ...	5	Ditto.
Sakheed (Chuttra)	17th „ „ ...	1	Ditto.
Mudkurpore (Kasmor)	22nd „ „ ...	9	Ditto.
Rolah Hazareebagh	23rd „ „ ...	2	Ditto.
Mutworee	1st January 1870 ...	2	Small-pox.
Ponda (Kasmar)	2nd „ „ ...	2	Ditto.
Gujjundee (Koderma)	„ „ „ ...	4	Ditto.
Hazareebagh Town	„ „ „ ...	1	*Chupka.**
		66	

* A cattle disease of the following description,—inflammation and soreness of the throat, liquid stools, ulcers on the nose, body cold, color of urine white, breathing natural. The animal remains diseased for about a fortnight. The people apply butter as a medicine.

DISTRICT OF SINGBHOOM.

From W. H. HAYES, Esq., *Deputy Commissioner, Singbhoom, to the Commissioner of Chota Nagpore,—(No.* 866, *dated* 24*th January* 1870*).*

SINGBHOOM.

Being out on tour, I have met with a singular epizootic which has considerably alarmed the villagers. It is quite different from *bussunto*, but fortunately has not extended to more than 3 or 4 villages in this neighbourhood. I submit a report of it in the form issued by the Cattle Plague Commission.

[The statement annexed shows that the disease in question prevailed in Mouzah Dheerool, Pergunnah Ghatsillah. No vernacular name was ascertained, and it is thought to be glanders. It broke out in December, and in a stock of 300, 12 were attacked, 11 died, and one was ill. The disease is supposed to be infectious.

The symptoms assigned are:—

Swelling of the tongue, with general œdema, thorough prostration and suppression of discharges, with difficulty in breathing. The disease lasted 24 hours, and was treated, apparently unsuccessfully, with *dhatura* and wild horse-radish.]

COLEHAN REPORT No. 1.

SINGBHOOM.

Singa Munda, Sindaree, CHORAIPEER—reports disease for upwards of two months past amongst the cattle of his village; the disease amongst them is termed *hotomo;* the throat and jowls or cheeks of the animal swell up; it ceases to eat or drink, and dies off in the course of two or three days, or in a shorter period; up to the present 46 head of cattle have died.

Copy sent to the Deputy Commissioner for his information.

CHYEBASSA,
The 17th May 1870.

W. RITCHIE,
Offg. District Supdt. of Police, Singbhoom.

COLEHAN REPORT No. 2.

Toaree, son of Turam Munda, Sakorsai, CHORAIPEER,—reports that for the last two months the cattle, goats, and sheep in his village have been dying of *rog;* that up to the present some 22 head of cattle have died, and some 12 or 14 sheep and goats belonging to different people in the village; to-day one cow died. This man came to me last Sunday, and I told him to come on Monday, but he did not appear until to-day, when he had been sent for.

Copy sent to the Deputy Commissioner for his information.

CHYEBASSA,
The 14th June 1870.

W. RITCHIE,
Offg. District Supdt. of Police, Singbhoom.

COLEHAN REPORT No. 3.

Dabbro Mankie, Sakorsai, CHORAIPEER,—reports cattle disease still existing in the following of his villages, *viz.,* Mohadee, Ramaijair, and that one buffaloe belonging to him is now suffering. In the first named village 7 head of cattle, including buffaloes, have died, and in the second village 3 bullocks; the disease is everywhere on the decrease now, and it is probable that it (the disease) may entirely disappear owing to the rains having set in. The disease was at its height in April and May before the wet weather commenced. The moment rain began to fall it commenced to decrease.

The cattle are not affected every year; the last time the disease prevailed was about three years ago. The present disease they (the Hoes) term *hotomotona,* or swelling of the glands of the throat; the moment this comes on, the ears of the beast affected droop and hang down. Nothing particular is perceptible about the eyes; water runs from the mouth. No change is visible as regards the body and coat of the animal, nor is this disease (*hotomotona*) attended by purging; and the animal, he says, when attacked, if not attended to, will die in 24 or 36 hours. The *gowallas* treat the disease in different ways; he only knows of one cure, that is, cauterizing with a hot iron round the swollen part of the neck. They never (he says) separate the diseased cattle from those that are not affected; does not believe that it is ever done by the Coles. Mankie is requested to make out a return of the whole number of cattle, buffaloes, goats and sheep that had died in his different villages since the commencement of the disease up to the present time.

Swelling of throat.

Copy sent to the Deputy Commissioner for his information.

CHYEBASSA,
The 25th June 1870.

W. RITCHIE,
Offg. District Supdt. of Police, Singbhoom.

COLEHAN REPORT No. 4.

Mankie, Assoora, GOOMRAPER,—appears to-day and reports the existence of disease amongst the buffaloes and cattle in village Baljooree. The disease is *rog,* and commenced some three months ago; up to the present some 15 head of all kinds of cattle have died in that village; also that in his (Mankie's) village the disease *rog* has appeared; it commenced yesterday, since which time 11 head of cattle and 2 pigs have died. The cattle that have died were all attacked with swelling of the throat, and purging at the same time; has not heard as to whether the disease has broken out in any other of his villages; states that he will make immediate inquiry and report.

Copy sent to the Deputy Commissioner for his information.

CHYEBASSA,
The 27th July 1870.

W. RITCHIE,
Offg. District Supdt. of Police, Singbhoom.

PATNA DIVISION,

COMPRISING THE DISTRICTS OF TIRHOOT, SHAHABAD, PATNA, GYA, SARUN, AND CHUMPARUN.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch			Page 209.
Tirhoot.	K. Mackinnon, Esq., M. D., Civil Assistant Surgeon, Tirhoot.	...	1st April 1836 ...	Describes the disease *matah* or *gootee*, p. 212.
	C. F. Cockburn, Esq., Commissioner, Patna.	40	*27th February* 1864	*Selections, Bengal Government, p. 23. States that no cattle disease has come to the notice of the district officer.*
	A. J. Elliott, Esq., Collector, Tirhoot.	93	*30th April* 1864 ...	*Selections, Bengal Government, p. 56. Describes the disease called "gootee."*
	J. Burke, Mr., Stud Department, Poosah.	...	*19th March* 1864 ...	*Selections, Bengal Government, p. 59. Describes diseases observed in the Poosah Stud.*
	J. W. Dalrymple, Esq., Officiating Commissioner, Patna.	277	*11th October* 1866...	*Selections, Bengal Government, p. 118. States that "gootee" and "khoorah" are known in the district.*
	R. P. Jenkins, Esq., Commissioner, Patna.	43	*8th February* 1870	*Reports that "khoorah," foot and mouth disease, prevails in the District of Tirhoot.*
	Ditto ditto ...	83	*14th March* 1870 ...	*Reports that no cattle disease prevails in Tirhoot.*
	Ditto ditto. ...	273	*20th August* 1870...	*Forwards reports from the Magistrate of Tirhoot regarding deaths of cattle at Dhooly from over-feeding, and at Bazhowlee from catarrh with diarrhœa.*
	E. Macnaghten, Esq., of Begum Serai.	D. O.	23rd October 1870	Letters received from indigo planters in Tirhoot in reply to a circular from this office. These are summarised at p. 212.
	T. Smith, Esq., of Shahpore	D. O.	24th October 1870	
	W. B. Hudson, Esq., of Peeprah.	D. O.	Ditto	
	W. Wilson, Esq., of Japaha	D. O.	Ditto	Ditto ditto p. 213.
	E. D. Urquhart, Esq., of Arrowah.	D. O.	2nd Nov. 1870 ...	
	J. Tripe, Esq., of Dine Chuprah.	D. O.	10th Nov. 1870 ..	

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Shahabad.	*C. F. Cockburn, Esq., Commissioner of Patna.*	40	*27th February* 1864	*Selections, Bengal Government, p. 23. States that no disease has been observed.*
	Ditto ditto ...	109	*26th June* 1864 ...	*Selections, Bengal Government, p. 51. States that "gootee" is well known and just breaking out.*
	A. W. Dalrymple, Esq., Commissioner of Patna.	277	*11th October* 1866 ...	*Selections, Bengal Government, p. 116. Describes varieties of cattle disease.*
	C. C. Stevens, Esq., Assistant Magistrate, Buxar.	86	*8th September* 1866	*Selections, Bengal Government, p. 120. Describes "gootee" and khoorah" and reports their occasional prevalence.*
	J. C. C. Daunt, Esq., District Superintendent of Police.	24	*2nd December* 1867	*Selections, Bengal Government, p. 320. Reporting the prevalence of cattle disease in the district.*
	W. D. Pratt, Esq., District Superintendent of Police.	164	1st December ...	Report that *sitlah* has broken out in the Sasseram and Rhotas Pergunnahs, p. 213.
	R. P. Jenkins, Esq., Commissioner of Patna.	353	9th ditto 1868	
	Ditto ditto ...	L	11th ditto 1869	States that the disease is dying out, p. 213.
	R. P. Jenkins, Esq., Commissioner of Patna.	80	17th March 1869 ...	Reports that there is little or no cattle disease in the Division, p. 213.
	H. Munro, Esq. ...	57	... ...	Describe the widespread prevalence of *sitlah* in Shahabad, and states that it is of annual occurrence, p. 214.
	H. Alexander, Esq. ...	637	7th May 1869 ...	Ditto ditto p. 215.
	J. S. Armstrong, Esq. ...	107	*5th June* „ ...	*Reports the outbreak of "sitlah" at the Berhampore fair in April.*
	Baboo Jodu Nath Bose, Deputy Magistrate, Bhubooah	...	*23rd March* 1870 ...	*Reports, in Form No. 1, outbreak of cattle disease in Pergunnah Chynepore.*
	Ditto ditto ..	130	*4th April* 1870 ...	*Forwards a further report on the same subject.*
	Ditto ditto ...	133	*6th ditto ...*	*Forwards amended statement referring to Mouzah Noroon.*
	Ditto ditto ...	137	*9th ditto ...*	
	Ditto ditto ...	138	*11th ditto ...*	*Forwards further report from Doorgamti Thannah.*
	W. D. Pratt, Esq., District Superintendent of Police.	86	*14th ditto ...*	*Gives particulars, in Form No. 1, of the outbreak at Noroon.*
	Baboo Jodu Nath Bose, Deputy Magistrate, Bhubooah	151	*15th ditto ...*	*Submits a further report of the prevalence of cattle disease in the Sub-division.*
	W. H. D'Oyly, Esq., Officiating Magistrate.	667	*25th ditto ...*	*Submits, in Form No. 1, a further statement of the prevalence of cattle disease.*
	W. D. Pratt, Esq., District Superintendent of Police.	95	*28rd ditto ...*	*Further particulars regarding Mouzah Noroon.*

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Shahabad,—*continued.*	*W. H. D'Oyly, Esq., Officiating Magistrate.*	761	*7th May* 1870 ...	*Submits a further report in Form* Index of Records. *No.* 1.
	Ditto ditto ...	840	19th ditto ...	Give particulars of the nature and treatment of cattle disease in Sasseram Sub-division, p. 217.
	H. Munro, Esq., Assistant Superintendent of Police.	34	6th ditto ...	
	W. H. D'Oyly, Esq. ...	972	*8th June* 1870 ...	*Further particulars of outbreak at Bhubooah.*
	The Villagers of Cowriram	...	8th ditto ...	Evidence recorded bythe Commission, p 217
	Ditto of Belooria	..	9th ditto ...	Ditto ditto p. 218.
	W. H. D'Oyly, Esq., Magistrate of Shahabad.	1537	*1st September* 1870	*Reports that no disease has existed since June last.*
	Ditto ditto ...	1649	*15th ditto* ...	*Reports outbreak of small-pox in Chynepore.*
	Ditto ditto ...	1688	*22nd ditto* ...	*Further report on same subject.* [These reports are summarised at p. 216.]
Patna.	*A. Hope, Esq., Collector of Patna.*	1238	*6th Feb.* 1864 ...	*Selections, Bengal Government, p.* 27. *States that for the last* 6 *or* 7 *years cattle disease has been alarmingly prevalent.*
	H. W. Alexander, Esq., Magistrate, Patna.	208	*22nd ditto* ...	*Selections, Bengal Government, p.* 28. *Forwards correspondence relating to murrain.*
	A. N. Cole, Esq., Deputy Magistrate, Barh.	189	*7th December* 1863	*Selections, Bengal Government, p.* 29. *States that no disease prevails in his sub-division.*
	Major J. Emerson, Cantonment Magistrate, Dinapore.	218	*9th ditto* ...	*Selections, Bengal Government, p.* 30. *Forwards a letter from Captain Chalmers, who describes a particular mode of treatment to which he attaches great faith.*
	Captain Chalmers, Deputy Assistant Commissary General.	451	*8th ditto* ...	
	C. F. Cockburn, Esq., Commissioner, Patna.	169	*22nd June* 1864 ...	*Selections, Bengal Government, p,* 51. *Says that the disease has not been so prevalent this year as last.*
	J. W. Dalrymple, Esq., Commissioner of Patna.	277	*11th October* 1866	*Selections, Bengal Government p.* 116. *Reports the prevalence of murrain in Dinapore and Behar.*
	Major A. Taylor, Deputy Assistant Commissary General, Dinapore.	301	*27th May* 1869 ...	*Describes the outbreak of murrain among cattle bought at the Berhampore fair.*
	Mr. Worsley	...	23rd February 1870	Statement, in Form No. 1, of cattle diseases prevailing in Patna District, p. 220.
	A. C. Mangles, Esq., Magistrate, Patna.	84	*28th May* 1870 ...	*Reports scattered prevalence of disease.*
	Ditto ditto ...	...	*11th June* 1870 ...	*Reports disappearance of disease.*

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Gya.	*J. W. Dalrymple, Esq., Commissioner, Patna Division.*	277	11*th October* 1866	*Selections, Bengal Government, p.* 116. *Reports that no cattle murrain has appeared since* 1864.
	A. B. Palmer, Esq., Magistrate of Gya.	*Form* 1	8*th January* 1870	*Reports the prevalence of cattle small-pox in November and December* 1869 *and January* 1870.
	Ditto ditto ...	217	21*st Feb.* 1870 ...	*Further reports from Uttri and Wagirginee.*
	Ditto ditto ...	232	24*th ditto* ...	*Report from Kheddar Serai outpost.*
	Ditto ditto ...	263	4*th March* 1870...	*Further report on the same subject.*
	F. H. Stevens, Esq., Joint Magistrate, Gya.	291	11*th ditto* ...	*Reports decline of disease in Uttri.* [These reports are summarised at p. 220.]
Sarun.	*C. F. Cockburn, Esq., Commissioner, Patna.*	40	27*th February* 1864	*Selections, Bengal Government, p.* 23. *Forwards reports from District Officer* in extenso.
	C. J. Jackson, Esq., Civil Surgeon of Sarun.	33	8*th ditto* ...	*Selections, Bengal Government, p.* 26. *Describes a disease "berooa" among sheep.*
	J. J. Grey, Esq. ...	165	22*nd ditto* ...	*Selections, Bengal Government, p.* 26. *States that "sitlah" or "matah" frequently prevail, among cattle.*
	Ditto ditto ...	3	2*nd May* 1864 ...	*Selections, Bengal Government, p.* 53. *Describes minutely the diseases prevalent among cattle in Sarun.*
	J. W. Dalrymple, Esq., Officiating Commissioner, Patna.	277	11*th October* 1866	*Selections, Bengal Government, p.* 116. *Describes "matah" and "waghah."*
	C. Agnew, Esq., Officiating Magistrate of Sarun.	1358	29th do. 1870	Gives statistics of cattle plague from 1866 to 1870, p. 222.
Chumparun.	*C. F. Cockburn, Esq., Commissioner, Patna.*	40	27*th Feb.* 1864 ...	*Selections, Bengal Government, p.* 23. *Quotes a description of "gootee" by the Civil Surgeon, Dr. Coates.*
	C. T. Metcalfe, Esq., Magistrate, Chumparun.	82	26*th December* 1869	*Reports that no epizootic prevails in the district.*
	Ditto ditto ...	...	4th March 1870 ...	Describes the diseases which prevail in the district, but states that none exist at present, p. 221.

HISTORICAL SKETCH.

In 1836, Dr. K. Mackinnon, then Civil Surgeon of Tirhoot, in reply to the circular of the Medical Board, describes the frequent prevalence of the disease *matah* or *gootee,* and gives the symptoms of that murrain.

1836.

Mr. John Stalkartt observed the same disease at Bongong, in Tirhoot, in 1845, and lost about three-fourths of about 200 pairs of bullocks.

1845.

No date can be assigned to the first appearance of cattle murrain in this Division. The oral testimony of the inhabitants of some villages in the Bhubooah Sub-division, whose evidence was recorded by the Commission on the occasion of their visit to that locality in June 1870, was to the effect, that the affection called *matah* was known from time immemorial, and broke out every two, three, or four years. Mr. C. C. Stevens, Assistant Collector of Buxar, who in 1866 inquired very fully into the cattle diseases prevailing in the same district (Shahabad), writes that both *gootee* and *khoorah* (rinderpest, and foot and mouth disease) have been known there from about 30 or 40 years, and mentions that the natives of the district assert that these diseases, as well as cholera, come from Bengal. Mr. Hope, the Collector of Behar, writing in 1864, states that the small-pox attacks cattle in that district every year, or every other year, most violently "at the conclusion of the hot weather and beginning of the rains." Mr. J. J. Grey, Collector of Sarun, discovers in the same year that *matah* is frequently prevalent amongst the cattle of the district. Here, in fact, as in every other part of Bengal, 1864 marks the period when attention was first directed to losses among horned stock from disease, and the blank in the local records of murrain, which only begin about this period to show a few vague but significant traces, simply indicates an absence of observation. These traces shall here be put down in chronological order.

The existence of cattle murrain in Behar from about 1858 is inferred from Mr. Hope's statement in 1864, that "for the last six or seven years the small-pox has been prevalent to an alarming extent among the cattle of the district." The losses from the disease are said to be an occasion of distress and ruin to agriculturists, and the description of the symptoms leaves no doubt of its being rinderpest.

1858.

Mr. A. J. Elliott, Collector of Tirhoot, mentions that 40 or 50 bullocks died of *gootee* in a factory in his district in 1859.

1859.

In 1861 *matah* is said to have been very bad in the south-east of the district of Sarun.

1861.

In 1862 there are several notices of the prevalence of cattle disease. On the Tirhoot banks of the Ganges, small-pox is said by Mr. A. M. Cole, Deputy Magistrate of Barh, to have carried off "vast numbers" of cattle. The disease *gootee* is said to have been prevalent in Chumparun, where the Civil Surgeon, Dr. Coates, made a careful inquiry into its nature, symptoms, and treatment. Segregation and "nourishing slops" are strongly recommended by this officer, who states that in this way nine-tenths of the herd will be saved. Mr. J. Burke, of the Poosah Stud, describes the symptoms of a disease which attacked the depôt bullocks in this year, which, from the *post-mortem* appearances, he concluded to be *pleuro-pneumonia.*

1862.

In December 1863, several cases of *gootee* occurred among the Government cattle at Dinapore. Captain S. Chalmers, Deputy Assistant Commissary General, who furnishes this information, states that this disease had recently been very destructive in the adjoining district, and

1863.

HISTORICAL SKETCH.

strongly advocates the employment of *karee neemuck* for its treatment. In the eastern part of the same district *matah* was severe in March and June, and one cattle-owner, Mr. Curtis, of Ramcolah, lost nearly a third of his stock; another, Khaggee Ramsan Ally, lost upwards of a hundred head of cattle. The symptoms related by Mr. J. J. Grey, the Collector, are most characteristic of rinderpest. In another letter written in February 1864, Mr. Grey states that the disease "last year seems chiefly to have attacked buffaloes." Mr. A. J. Elliott, Collector of Tirhoot, reports in April 1864 that "last year *gootee* appears to have been extremely prevalent in the north of the district." Foot and mouth disease attacked, in the rains of 1863, the cattle of the Poosah Stud.

1864. In 1864, records of the prevalence of disease are more numerous and definite: *gootee* prevailed in the south of the district of Shahabad in the month of June. In the Behar Sub-division of the Patna District "*matah* raged with great severity." In the Dinapore Sub-division of the same District, *dakuha* (apparently a form of rinderpest) prevailed in July and August. Disease prevailed also in the Sub-division of Sewan, of the Sarun District, in the Buxar Sub-division of Shahabad, and in the vicinity of the Poosah Stud, in the Tirhoot District. Major C. L. Brown, Pension Pay Master, Dinapore, states that disease existed in that station in March 1864, and was carrying off large numbers. He asserts that the murrain is *gastritis*, and advocates warmly a system of homœopathic treatment.

1865. After the effort of 1864 interest and attention seem to have flagged, and records of disease become more rare. Occasional villages of the Buxar Sub-division of the Shahabad District are said to have been visited by *gootee*. *Dakuha* also prevailed in Dinapore.

1866. *Gootee* continued to prevail in a scattered way in Buxar in 1866 and *dakuha* in Dinapore. In the Sewan Sub-division of Sarun, *matah* and *waghah* (a species of rinderpest without cutaneous eruption) were prevalent. From a return received on the 1st of October 1870 from this district, 4,600 cattle are said by the police to have been attacked with *matah*, and 1,822 to have died.

1867. From July to December 1867 both *gootee* and *khoorah* (rinderpest, and foot and mouth disease) prevailed in the Rhotas and Chynepore Pergunnahs of the Shahabad District, said to have been imported from the Chynepore hills. In Sarun 4,510 cattle are said to have been attacked with *matah*, and 1,930 to have died.

1868. From September to December 1868 *sitlah* is reported to have prevailed in the Rhotas and Sasseram Pergunnahs of Shahabad. In Sarun 4,129 cattle are stated by the police to have been attacked with *matah*, and 1,889 to have died.

1869. In January 1869 *sitlah* was reported to be dying out in the Bhubooah Sub-division of Shahabad; in May it was again heard of in the Rhotas and Sasseram Pergunnahs, where 12 villages were found by the police to have been affected by the disease. The same disease broke out in April and May in the villages adjoining the Berhampore cattle fair. In Tirhoot also cattle disease prevailed in the month of January; at Muddoobunee rinderpest broke out in March at the station of Dinapore among some cattle which had been bought in February at the Berhampore fair. In November and December "small-pox" prevailed in the District of Gya at several villages under the police jurisdiction of Uttri. In Sarun, the police report 5,041 cattle attacked, and 2,461 deaths among these.

1870. In the District of Shahabad cattle disease appeared again early in the year in the Chynepore Pergunnah and Bhubooah Sub-division; the disease continued to prevail very extensively until the month of June. On the 8th and 9th of this month the affected localities were visited by

the Commission, and the prevailing disease was found to be rinderpest. This disease prevailed in the Sasseram Pergunnah also, in the months of March and April. It was heard of again in August and September in the Chynepore Pergunnah. In the month of May the same disease was reported to prevail in several villages of the Patna District, but in a very scattered way, and in June seems to have disappeared. In the Gya District the disease prevailed in January and February in the Purhul and Mohair Pergunnahs. In Tirhoot foot and mouth disease was reported in February from the Khajowly village of the Muddoobunee Sub-division, and reports came from Poosah in August that a "catarrh with diarrhœa" prevailed in some neighbouring villages. In Sarun the number of cattle attacked by *matah* is put down by the police at 3,468, and of deaths at 1,669; but no particulars are given as to locality, symptoms, treatment, &c. HISTORICAL SKETCH.

TIRHOOT.

DISTRICT OF TIRHOOT.

Extract from the Records of the Bengal Medical Department.

From K. MACKINNON, Esq., M. D., *Civil Assistant Surgeon, Tirhoot, to the Superintending Surgeon, Dinapore Division, dated 1st April* 1836.

I now do myself the honor to reply to your circular and the accompanying letter from the Secretary to the Medical Board on the subject of variolous and vaccine disease in cattle.

Existence of *gootee*. I have had some opportunities of seeing the disease named *gootee* or *matah* by the natives, for it often prevails among the cattle as an epidemic, destroying in some seasons great numbers of them.

Varying type. I think there can be no doubt that if there are not two kinds of this eruption affection in specific character, there are at any rate two kinds in respect to the degree of intensity, for it sometimes, although prevalent amongst the cattle, is mild and innocuous, at other times, as above stated, its attacks are fatal.

Symptoms. The mucous lining of the mouth and nostrils is in such cases covered with an intense pustular eruption, the eruption extending, but with less intensity, over the whole body.

Eruption. I hope hereafter to furnish more particulars regarding the progress of the disease in the milder form of eruption, which is called *kodooah* by the natives from its similarity of appearance to the grain of that name, and to distinguish it from the *gootee*.

Eruption on the udder. The cow's udder is often the seat of it, and the *goallas* who milk the cows have the

Communicable. eruption communicated to their hands: this eruption is painful, with swelling of the hand and arm, accompanied sometimes with fever.

The result of further inquiry and personal observation upon the above subject, I shall duly communicate.

Information supplied by Indigo Planters of Tirhoot regarding murrain.

Reporter.	Names.	Symptoms.	Mortality.	Season.	REMARKS.
E. Macnaghten, Esq., of Begum Serai.	*Gootee* or small-pox.	Not given	25 to 30 per cent. Cites cases of two contiguous herds of buffaloes: in one instance all recovered, and in the other all died.	March or April.	The prevalence of murrain at this season may be due to the large fairs which are held in the district.
T. Smith, Esq., of Shahpore.	*Gootee* or murrain.	Refusal of food, looks dull, ears drooping, hair stands, eyes water; has diarrhœa, evacuations bloody.	50 per cent. to 75 per cent.	April to September.	Is of yearly occurrence, sometimes mild, sometimes severe; treats successfully with doses of salt and linseed oil and drenches of *suttoo*.
W. B. Hudson, Esq., of Peeprah.	*Dakaha*, so called because the animals die within first stage (*dák*).	Swelling of the throat; discharge of blood and mucus from the mouth; complete inability to eat or drink; abdomen swells in an hour or two from the time discharge is first noticed; all the glands on one side of the neck become swollen, so as to force the animal's head round into a twisted position, so that the mouth, instead of being in its usual horizontal position, is quite perpendicular. Breathing becomes quite impossible, and the animal generally dies in about 4 hours' time, *i. e.*, from the time the first symptoms are noticed by its owner.	About 95 per cent.	Beginning of the rains.	These diseases were almost unknown till within the last ten years.
	Gootee, small-pox.	Usual symptoms. Describes pustules on belly and thighs.	35 to 40 per cent.	All the year round.	

Information supplied by Indigo Planters of Tirhoot,—contd. SHAHABAD.

Reporter.	Names.	Symptoms.	Mortality.	Season.	Remarks.
W. Wilson, Esq., of Japaha.	*Gootee*, small-pox.	Begins with low fever, and ends with violent purging.	Not given.	September, October.	Whole flocks are carried off by this disease when it gets among factory cattle. Separation is practised.
E. D. Urquhart, Esq., of Arrowah.	*Gootee* or murrain, small-pox.	Refusal of food; fever; discharge and purging. Animals die in nine days or so.	75 per cent. or more.	May, June and November.	A fearful disease, spreading through herds and carrying off numbers.
J. Tripe, Esq., of Dine Chuprah.	*Gootee* ... *Dakaha* ...	Well known ... ... Foaming, swelling of the mouth, slight swelling of body, a desire to vomit, then convulsions set in, and death generally occurs a few hours after the attack.	Very great. Recovery rare.	During the rains.	

DISTRICT OF SHAHABAD.

From W. D. Pratt, Esq., *District Superintendent, Police, Shahabad, to the Magistrate of Shahabad,—(No.* 164, *Camp Dhungain, dated* 1*st December* 1868*).*

I have the honor to report for your information that *sitlah* or small-pox has broken out since September last among the cattle in the Sasseram and Rhotas Pergunnahs.

2. In 1864 this disease showed itself in this district, but in 1865 and 1866 I hear that it did not make its appearance in Shahabad.

3. Last year (1867) Captain Daunt reported to you that 3,215 cattle, valued at Rs. 12,021-8, had died of this and of a hoof disease, but that *sitlah* was the most fatal of the two.

4. This disease, *sitlah*, first broke out in September last near Dehri outpost, and in that jurisdiction, from the 1st to 26th of that month, 25 head of cattle, valued at Rs. 215, died. No deaths from that part have been reported since.

5. In October the disease made its appearance in the Rhotas Pergunnah, near Tilloothoo, and since October 7 bullocks, 6 cows, and 60 buffaloes have died from it, and 2 bullocks and 16 buffaloes are still suffering.

From R. P. Jenkins, Esq., *Officiating Commissioner of Patna, to the Magistrate of Shahabad,—(No.* 229, *dated* 9*th December* 1868*).*

With reference to your memorandum No. 1688, dated 3rd instant, forwarding copy of Mr. District Superintendent Pratt's letter, reporting that *sitlah* or small-pox has broken out among the cattle in the Sasseram and Rhotas Pergunnahs, I have the honor to request that you will use every endeavour to prevail on the natives to separate their affected cattle as soon as the first symptoms of the disease manifest themselves among them. I have reported the matter for the information of Government.

Memo. from W. D. Pratt, Esq., *District Superintendent, Police, Shahabad, to the Magistrate of Shahabad,—*(*No. L, dated* 11*th December* 1868).

With reference to his No. 1699 of the 4th instant, begs to inform him that though some cattle are still suffering from *sitlah*, the disease seems to be dying out.

From R. P. Jenkins, Esq., *Officiating Commissioner, Patna Division, to the Secretary to the Government of Bengal, Judicial Department,—*(*No.* 80, *dated* 17*th March* 1869).

With reference to Government orders No. 84 of 9th January last, I have the honor to state that there is little or no cattle disease in any of the districts of this Division; only in the Sub-divisions of Bhubooa in Shahabad and Madhoobunee in Tirhoot, the disease prevailed to a slight extent about the latter end of January.

2. None of the District Officers consider the services of Dr. Farrell necessary in their districts.

SHAHABAD. *From* R. P. JENKINS, Esq., *Officiating Commissioner, Patna Division, to the Secretary to the Government of Bengal, Judicial Dept.*,—(*No.* 166, *dated Patna,* 12*th May* 1869.)

In continuation of my letter No. 80, dated 17th March last, I have the honor to forward copy of the enclosed communication from the Magistrate of Shahabad, reporting that cattle disease is still raging in his district. Should the Government be of opinion that professional aid is necessary, I would request that it be sent up. For my own part, I do not think that any such measure will result in success, unless the people themselves are inclined to obey instructions and separate off the diseased from the rest of their cattle. I do not myself think cattle owners, as a body, will ever be induced to do this in their present state of apathy and ignorance.

No. 637 of 7th instant.

Memo. from H. MUNRO, Esq., *Assistant Superintendent of Police, Sasseram, to the Magistrate of Shahabad,*—(*No.* 57).

With reference to your memorandum No. 335, dated 3rd April, the following are the answers to your questions :—

1*st.*—The disease first showed itself in the villages of Beraree, Nard, Nundeera, and Beratchee ; the two first mentioned villages in Pergunnah Sasseram, and the other two in Pergunnah Rhotas.

In the village of Nard	... ...	15 head of cattle died.
„ „ Beraree	... ...	20 „ „
„ „ Nundeera	... ...	25 „ „
„ „ Beratchee	... ...	12 „ „

Besides the above-mentioned places, the disease has spread through the following villages and carried off a number of animals :—

Pour Nadie	... ...	14 head of cattle died.
Nomdeha	... ...	7 „ „
Badreeh	... ...	16 „ „
Shukpoora	... ...	29 „ „
Nowhatta	... ...	45 „ „
Tenaru	... ...	15 „ „
Teeto	... ...	17 „ „
Bhuria	... ...	13 „ „
Nunnudeechuk	... ...	10 „ „
Bulhuddlepore	... ...	7 „ „
Balama	... ...	17 „ „
Beraja	... .	2 „ „
Delahra	... ...	13 „ „
Namadel	... ...	8 „ „
Taowlia	... ...	20 „ „
Rusoolpore	... ...	12 „ „
Moharajgunge	... ...	26 „ „
Chundunpore	... ...	20 „ „
Surja	... ...	30 „ „
Gonda	... ...	7 „ „
Pepra	. ...	3 „ „
	TOTAL ...	330 „ „

Pergunnah Sasseram.

Konka	...	...	...	...	...	7	head of cattle died.
Darawn	...	...	...	...	...	10	„ „
Gehaminpore	...	...	...	...	...	4	„ „
Bardhee	...	...	...	...	...	17	„ „
Allumpore	...	...	...	...	...	9	„ „
Soobooree	...	...	...	...	...	10	„ „
Sekuria	...	...	...	...	...	16	„ „
Jubbru	...	...	...	...	...	39	„ „
Bordeeha	...	...	...	...	...	25	„ „
Sheo Dehree	...	...	...	...	...	31	„ „
Roghoonathpore	...	...	...	...	...	30	„ „
Naddana	...	...	...	...	...	15	„ „
Nowadeef	...	...	...	...	...	10	„ „
Dhunafrah	...	...	...	...	...	5	„ „
Peareepore	...	...	...	...	...	2	„ „
Sulleya	...	...	...	...	...	2	„ „
Ajohalla	...	...	...	...	...	2	„ „
				TOTAL	...	233	„ „

This disease breaks out every year at the same time, and is not at all unusual.

To what cause the disease is attributed, I am unable to say, nor can any one give a clear reason.

Memo. by H. ALEXANDER, Esq., *Magistrate, Shahabad,*—(*No.* 637, *dated 7th May* 1869).

Copy forwarded for the information of the Commissioner. The villagers in the district seem perfectly unable to contend with this disease among their cattle, nor do they appear to know of any proper cure for it. It breaks out annually. The mortality has, however, been great within the last four months, and as the disease is still prevalent, it seems to me proper to bring the matter to notice, in order that, if possible, professional aid may be procured with a view to checking it. The diseases which seem to attack cattle most are called by the Natives *sitlah* or *khoorah* and *posanga,* and their symptoms are,—*khoorah* or *sitlah* are said to be apparent in a loss of appetite, accompanied with insatiable thirst, a discharge from the nose, eyes, and mouth, and a roughness of the skin, which eventually breaks out in boils. The symptoms of *posanga* are somewhat similar to those of *khoorah,* only the effects are apparent internally, causing the passing of blood, which emits an unhealthy stench, and in which the contagion apparently exists.

Instructions have been sent through the Police to direct the people to keep all cattle attacked separate from others, and so shut off all communication. It is feared that the Natives, in their usual callous way, pay very little attention to these instructions, looking upon the matter as one of *kismut* or fate.

SHAHABAD.

Summary of Reports regarding cattle disease prevailing in the Chynepore Pergunnah of the Shahabad District.

Thannah.	Village.	Date of outbreak.	Date of report.	Name of disease.	Number of cattle in the locality.	Number of cattle attacked.	Number died.	Number recovered.	Number still ill.
		1870.	1870.						
RAMGHUR.	Bhagnie ...	13th Jany. ...	23rd March ...	Bagha ...	...	8	5	...	3
	Khandhidebra ...	11th „ ...	„ „ ...	Small-pox ...	...	12	...	...	12
DOORGAMITI.	Khursanda ...	April ...	19th April ...	Ditto ...	125	28	15	10	3
	Chumkra ...			Ditto ...	100	22	2	12	8
	Dhela ...			Ditto ...	100	30	9	17	4
BHUBOOAH.	Mehdwar ...	10th Jany. ...	„ „ ...	Muh-Pasijah ...	...	2	2	...	...
	Orgain ...	12th „ ...	„ „ ...	Ditto ...	...	2	2	..	...
	Khurda ...	.....	4th April ...	Small-pox ...	..	8	4	4	...
	Bhourahon ...	.....	„ „ ...	Ditto ...	...	20	16	4	...
	Radar ...	3rd Feby. ...	„ „ ...	Muh-Pasijah ...	...	1	1	...	...
	Do. ...	17th „ ...	„ „ ...	Chutka ...	400	1	1	...	...
	Do. ...	25th Jany. ...	„ „ ...	Khoorah ...	...	8	...	8	...
	Surungpore ...	31st „ ...	„ „ ...	Small-pox ...	...	2	2	...	...
	Dum-Dum ...	3rd Feby. ...	„ „ ..	Ditto ...	...	2	2	...	...
	Fokarabad ...	10th Jany. ...	„ „ ...	Bagha ...	...	1	...	...	1
	Ghaloon ...	2nd „ ...	„ „ ...	Small-pox ...	...	7	1	6	...
	Kahar ...								
	Sherfoon ...	April ...	13th April ...	Ditto ...	1,599	145	37	20	88
	Saladpore ...								
	Mahooree ...	13th April ...	25th „ ...	Ditto & Khoorah	700	50	10	...	40
	Sahamul ...	5th „ ...	20th „ ...	Ditto & Ditto	1,500	31	1	...	30
	Lobra ...	29th March ...	25th „ ...	Ditto ...	200	9	4	...	5
	Khalasfoon ...	14th April ...	„ „ ...	Khoorah ...	1,000	20	...	6	14
	Chund ...	15th „ ...	„ „ ...	Khungma ...	500	25	...	...	25
	Bhamoo ...	„ „ ...	„ „ ...	Ditto ...	300	40	...	...	40
	Bagbaila ...	„ „ ...	„ „ ...	Ditto ...	200	25	...	...	25
	Dhobba ...	„ „ ...	„ „ ...	Ditto ...	250	100	...	...	100
	Bhairee ...	„ „ ...	„ „ ...	Ditto ...	70	16	...	..	16
	Tetree ...	8th „ ...	„ „ ...	Khoorah ...	1,000	9	1	...	8
	Rampoor ...	5th „ ...	„ „ ...	Ditto ...	200	20	...	4	16
	Noroon ...	13th Oct. ...	„ „ ...	Small-pox ...	379	147	66	81	...
	Doom-Doom ...	22nd April ...	7th May ...	Khoorah ...	150	15	...	...	15
	Khaira ...	14th „ ...	„ „ ...	Small-pox & Khoorah ...	200	28	3	...	25
	Durboobee ...	19th „ ...	„ „ ...	Ditto ...	85	7	...	...	7
	Kochandie ...	15th „ ...	„ „ ...	Ditto ...	70	10	...	10	...
	Mujeeham ...	„ „ ...	„ „ ...	Ditto ...	384	40	...	35	5
	Rooyah ...	17th „ ...	„ „ ...	Small-pox ...	190	25	9	10	6
	Belomdee ...	27th „ ...	„ „ ...	Ditto ...	266	1	...		1
	Baneeyoon ...	25th „ ...	„ „ ...	Khoorah ...	115	36	...	...	36
	Peeparyah ...	„ „ ...	„ „ ...	Ditto ...	250	20	...	...	20
	Dagoondah ...	„ „ ...	7th May ...	Kkoorah ...	300	12	...	...	12
	Pathanee ...	„ „ ...	„ „ ...	Ditto ...	150	35	...	...	35
	Amoorkhra ...	17th „ ...	„ „ ...	Ditto ...	150	11	...	11	...
	Mookhree ...	13th „ ...	„ „ ...	Small-pox ...	700	24	2	...	22
	Poimondie ...	27th „ ...	8th „ ...	Ditto ...	266	12	3	1	8
	Rooria ...	17th „ ...	8th „ ...	Ditto ...	190	37	18	14	5
	Doromhee ...	9th May ...	8th „ ...	Ditto ...	262	30	10	5	15
	Seopore ...	24th August ...	12th August and 19th September	Ditto ...	115	35	28	...	7
						45	37	3	5
				TOTAL ...	13,166				
						1,214	291	261	662

[REMARKS.—This statement has been prepared rather with a view to show the distribution of the disease in the district, than for a statistical purpose The figures are not worthy of much reliance, but they show that about 9 per cent of stock were attacked, and that of the cases whose result is given, 52·7 per cent. died and 47·3 per cent. recovered —a very probable statement.]

SHAHABAD.

From H. MUNRO, Esq., *Assistant Superintendent of Police, Sasseram, to the District Superintendent of Police, Shahabad,—(No. 34, dated Sasseram, 6th May* 1870*).*

I have the honor to forward the following information gathered regarding the cattle disease in this sub-district; although to a certain extent the disease broke out some time back, yet perhaps the information may be useful.

There are two kinds of cattle disease known here, *viz.*, *sitlah*, and *khoorah* or foul foot. It will be seen from the following that it is not known how the first mentioned disease originates.

In the Sasseram Pergunnah the number of cattle attacked during March and beginning of April was 35, out of which 25 died and only 10 recovered. The villages losing cattle were Memri, Sogonli, Sooki and Gurhar. The disease is decidedly infectious, and when it first breaks out amongst a herd of cattle, those which have not been inoculated are always attacked. Cattle that have had the pox once seldom take it again. Small red spots are visible all over the body; from the eyes and mouth proceeds a thick slimy spittle; the body becomes hot, and there is slight coughing, and when the animal has nearly succumbed to the disease, the legs are noticed to tremble very much. No swelling in the throat apparent; the fæcal matter very thin. Cattle with the disease linger on for about five days and then die. Those which recover never do so under 15 days, and even at that time are so thin and prostrated as to be unable to walk. It is strange that the disease in this part of the district should be confined in a great measure to villages at no great distance from the hills.

The information I received from the south of the district was so untrustworthy, that I will only mention that in the whole jurisdiction of Akburpore only seven animals were attacked, two died, and five recovered.

A mode of treatment I learnt from the Natives was,—5 seers of curds and whey, 1 seer of leaves from the *bakain* trees,—the leaves to be powdered very fine,—1 *ghurrah* of water, 5 seers of wheat not finely powdered; all to be boiled up together to a thick state and given to the animals constantly.

I have never seen this put in force, and shall take the first opportunity of watching its progress as a restorative.

With regard to the *khoorah*, although not raging here, Mr. Charles Davies, of Rohtasgurh, kindly placed the following information at my disposal with regard to this disease. When it first breaks out the ulcerated portions of the hoof should be carefully cut away; frequent washings and application of a salve made of catechu, tobacco, and columba. When the droves affected are too numerous for efficient treatment, the animals are driven into water often, and made to run about freely on sand, which eventually cures the majority. Mr. Davies mentions another manner of death of cattle operating down to the south of the district, which, though it bears the semblance of disease, is in reality not so.

An animal suddenly grows dull, refuses food, refrains from rumination, seeks water eagerly, and the stomach suffers great distention; purgation of a most offensive nature then ensues twice or thrice, and the animal dies. The whole course seldom exceeds three days.

Mr. Davies thinks that the latter disease is brought about by chamars administering poison to the animals.

I think Mr. Davies is in a measure right in thinking so, as the attack comes on so suddenly, and the animals die in so short a time. Last year only, a lad was found poisoning cattle in that part and was imprisoned. Immediately *sitlah* breaks out again, I will proceed myself and try whether the remedy used by the Natives is in reality a valuable one.

Cowriram village, visited 8th June 1870, *at* 6 A. M.

This village is east of Mohaneah, about 3 miles distant on the side of the Grand Trunk Road.

Case. A bullock owned by one Protaub Rai, 6 years old, and in good condition, has been ill for the last 10 days, during which time the animal, it is asserted, has eaten nothing; has excessive thirst; it purged watery stools for the first 2 days of attack, but subsequently has purged little. The present symptoms are,—coat somewhat rough; slight discharge from eyes; much sticky discharge from nose; muzzle very dry and very much reticulated; the animal is apparently very weak; the gum and buccal papillæ looked healthy, but the tongue was much furred; no medicine is being given; animal seemed to be recovering.

Evidence of villagers. BHOYRUB RAI, GUNPUT RAI, and ROOP NARAIN COONDOO, of Cowriram, say,—this village is inhabited by 50 or 60 families, all Hindoos, including Chamars, Dosauds, Coondoos, Rajpoots, and Kyasts. They own nearly 200 head of cattle, including 25 buffaloes. There are

Village stock.

SHAHABAD.

Rinderpest.

Mortality.

no goats or sheep in the village; the cattle have had disease for the last 15 days; we call this disease *matah-ka-niksar;* some call it *moolh-pusunja.* The losses among cattle are as follow:—

	Bullocks.	Cows.
Boyrub Rai lost	2	0
Protaub Rai „	1	1
Gonesh Rai „	1	0
Sumaroopaset „	0	1
Jogeepaset „	0	1
Chowdhry „	9	2
Samo Laul „	0	1
Heera Laul „	0	1
Dindyal Gun „	2	0
TOTAL ...	15	7

Symptoms.

Source of disease.

Infectiousness.

Separation.

Treatment.

Foot and mouth disease.

Hoven.

Symptoms of *khoorah.*

Symptoms of *Foolbaga.*

History.

Chamars.

Hides.

Poisoning

Price of cattle.

Supply of cattle.

Markets.

Beparees.

Cultivation

The animals died after an illness of 2, 3, 4, and even of 6 days. The symptoms of the disease are,—discharge from eyes, nose and mouth; purging watery and slimy stools; ears drooping (the hair did not stand on end); off feed; great thirst; no eruption on the skin; offensive breath and stools; mouth very hot (the mouth of the affected animal was not hot). At present the bullock owned by Protaub Rai is ailing; others are all right; the village lost a bullock only yesterday. Before the disease appeared in our village, the neighbouring places of Belooria and Chatter had been affected. The cattle of all these villages graze together daily. Belooria is still suffering, but not Chatter. We consider the disease to be infectious. With exception of Protaub's bullock, which looks as if it is recovering, there has not been one case of recovery in our village. We have not the means of separating the sick from the healthy cattle; Lohora and Hera Laul lost their entire herds. We are aware of no medicine, and we apply none; some of us have, however, given a drink of *neem* or *serish* leaves as a cooling medicine. Besides this disease, there is a distemper called *khoorah,* and another called *foolbaga,* which attack the cattle; *khoorah* is not fatal, *foolbaga* is sometimes so. In *khoorah* the mouth and feet are affected, and the animal is laid up. In some cases the mouths, and in others the hoofs, get the sore first. In *foolbaga* the animal gets swelled, off feed, and dies in 2 or 4 *ghurrees* (hours). If the affected animal purges, it gets better; the disease *matah-ka-niksar* is not new. It comes to the village generally after an interval of 2 or 3 or 4 years; 4 years ago it appeared in our place, but the mortality then was not so great as it is now. The chamars have no cattle; they plough for others, and their families act as midwives. They also sell cattle hides. Only Protaub and Bhoyrub Rai buried their cattle. The skins of others were taken by the chamars. The chamars of Kassee and Ghazeepore came here and purchased the skins from the village chamars. The chamars do poison the cattle now and then, but we have never seen it done. Ten years ago a chamar was seized in the act of poisoning Gocool's buffaloe; but the matter was hushed up. It is also said that chamars get *demons* to bring on murrain. The price of cattle has increased by 25 per cent., comparing the present market with 10 years ago; we generally get our cattle from the Berhampore and Dadri fairs, 50 to 60 miles distant from this place. There are large cattle fairs in these places. The *beparees* also bring cattle once a year to the village. They come in July; they do not buy any animals from the villagers. They come from the district of Tirhoot and sell cattle on credit; they realize the money in February or March following. Laban will not be able to till his lands this year, and the zemindars will let those to others; we shall manage to till somehow or other.

Belooria village, visited 9th June 1870, *at* 5-30 A. M.

This village is 2 miles south-east of the Mohaneah Dák Bungalow. A bullock, 6 to 8 years old, owned by Corbanally; condition poor; 4 days ill; discharge from eyes, nose and mouth; œdema around eyes; excoriations and aphthous condition of gums and buccal membrane, especially at the angle of the mouth; breath very offensive; has been purging watery stools, mixed with blood and mucus, since yesterday; off feed, but is thirsty; mouth hot and body cold; symptoms of eruptions on ribs; coat staring; ears drooping; very weak; lies down a great deal; tongue furred.

2. A bullock owned by Bhoyrub; 5 years old; condition good; 3 days ill; slight discharge from eyes; very viscid discharge from nose; dry reticulated muzzle; discharge from mouth; excoriations and aphthous condition of gums; buccal membrane is yet congested; œdema around eyes; conjunctiva much congested; ears drooping; purging as in the last case; off feed; drinks little.

3. A bullock owned by Bhoyrub; 8 years old; condition fair; 5 days ill; excoriations and aphthous condition of floor of mouth, hard palate and gums, as also inside of corner of mouth; buccal membrane only congested; muzzle dry and reticulated; œdema around eyes, nose, and mouth; purging 3 days.

4. Cow, 6 years old, belonging to the same person; condition fair; 3 days ill; off feed; great thirst; ears drooping; coat staring; excoriations on hard palate, floor of mouth, and around opening of sub-lingual gland, and upon gums; buccal membrane much congested and tumid; muzzle reticulated; eyes semi-closed; œdema of lids; mouth hot; tongue furred; vagina deeply congested, and around vulva skin tumid; on opening the lips aphtha is found; the animal is in calf. Case.

5. One bullock recovering was seen. Case.

6. A bullock owned by Goruck found lying on its near side, unable to rise; age 8 years; condition poor; 3 days ill; profuse discharge from eyes, nose, and mouth, and blood from Schneiderian membrane; mouth not much diseased; slight excoriations on the gums; conjunctiva much congested; muzzle very dry. Case.

CAREBANALLEE, SHEIKH ROHUMOTALLEE, MEER SHOOJOETALLEE, and DEONARAIN, of Belooria, say,—this village contains about 100 houses and about 125 head of cattle, including buffaloes. The village is inhabited by Hindoos and Mussulmans, including chamars. It stands about a quarter mile distant from the Grand Trunk Road. The disease among cattle has been prevailing in this place for the last month and a half; it is called *chechack* or *gootee nilsar*; the number that have died from this disease is 10, namely, 5 bullocks, 1 cow, and 4 buffaloes. Village stock. Situation. Mortality.

The last death occurred 8 days ago; the deaths resulted from the disease that the Commission have seen here this morning; 7 head of cattle recovered. The disease is *gundwa* or infectious; the disease at first appeared in our village. There was no disease in any other village in the neighbourhood at or before the time; our cattle graze during day in the fields near or far from the road. In fact, they go in any direction they wish to go, and are kept in houses during night. It also happens that the cattle of other villages graze on the same way, and consequently with the cattle of this place. Ten years ago this village had an outbreak of similar disease; that attack was milder than the present attack; then no other village was affected; we heard from people that there was disease nearly all over the country, but in the neighbourhood there was no disease; we cannot say how the disease came to this place; the bullocks form the greater portion of the cattle. Almost in every Assar month (July) the *beparees* bring cattle from Tirhoot and we buy from them; we also get our supplies from Berhampore and Bulleah, where there are cattle fairs periodically; the bullock which sold for 10 Rs. ten years ago, fetches Rs. 12 or 14 now; the cause of this is that the number of cattle available has been reduced. Berhampore is on the railroad. The cattle bred in our country are of smaller size and give less milk than the cattle brought from Tirhoot, Berhampore and Bulleah, which are called *uttraha*, and which are larger in size and give more milk. The buffaloes and cattle during floods are sent to the Chynepore Hills (Rajmehal Hills) for pasture. They are sent there in Srabun and Bhadore (July and August) and brought back in Aughan and Pous (November and December). Sometimes the cattle during their stay in the hills get the *gootee* in the rains; many die there. The *gootee* there is more general and more severe, and kills a large number of cattle. During the rains a large number of cattle are collected there and the disease breaks out among them. The cattle bring the disease from the hills to their homes; the cattle of this village came back from the hills in October last, but they did not bring any disease with them. On this occasion a man present states that his village, named Benaitah, stands on the side of the Grand Trunk Road, and has a "serai" in it. It had the cattle murrain from February and March before last to February last, and during all this time nearly 40 head of cattle, out of 200, died of *gootee*. In our village "serai" 10 to 25, and sometimes as many as 50 head of cattle belonging to *buniahs* and carters come in in the evening, and after taking up their night's lodging go away in different directions in the following morning, and I have seen diseased and disabled cattle brought into the "serai" and left to die there. The disease has generally been *gootee*, like the distemper you see in this village, and sometimes *khoorah*. These diseased cattle coming to the "serai" spread disease from one place to another. Sometimes the carcasses of dead cattle are buried, and at others they are thrown away and taken charge of by the chamars, who take the hides and sometimes sell them, and at other times make shoes of them; they sell to a *soudagur* (merchant), who collects them in the village and takes the hides to some city. Besides *gootee* there is another fatal sickness called *muhpusijah*; in that disease the mouth waters, the animal purges, and dies in two or three days. It appears in all seasons; the disease is also infectious. The cattle also get *khoorah*, but that disease is not fatal. We never heard of any case of cattle poisoning; we never saw any; we have occasionally suspected cases of cattle poisoning. Four days ago a milk cow, evidently in good health, died all of a sudden. It watered from the mouth, ran out of the house and dropped down dead. Dawun Roy is Theekadar of this village. The horns of buffaloes are taken away by the chamars; those of cows and bullocks are thrown away. The goats and sheep get this disease; they get it during the rains. Infectiousness. Source. Grazing. Rinderpest in 1860. Cattle dealers. Markets. Price. Breeds. Cattle sent for pasture to the hills. Rinderpest there. Disease brought back to the plains. Village Benaitah. Rinderpest there. Disease in a "serai." Disposal of carcasses. *Muhpusijah*. *Khoorah*. Cattle poisoning. Horns. Goats and sheep.

SHAHABAD.

10th June 1870.

Post-mortem examination.

5 P. M.—*Post-mortem* examination of a cow brought, and found to have died of hoven.

6 P. M.—Another case of the same kind at village Belooria.

The first case also showed symptoms of inflammation of the fourth stomach, which was all but empty; some of the contents are preserved in a bottle for chemical analysis; the lungs were more or less collapsed, and the larynx and upper portion of the wind-pipe inflamed from entrance of foreign material.

The second case was one of simple hoven, and the lungs were emphysematous.

The fourth stomach was quite healthy. It is worthy of note that both these cases occurred in a locality and a time when rinderpest was prevailing amongst the cattle; the one was mistaken for rinderpest. Probably at this time of year, specially in this district where pasture is scanty and bad, very many cattle are lost from hoven. The cause of hoven was impaction of first stomach with coarse, indigestible, dry, non-nutritious fodder.

The two cattle were in an impoverished condition.

DISTRICT OF PATNA.

PATNA.

Diseases of cattle prevailing in the Patna District, communicated by C. F. WORSLEY, Esq., *Joint Magistrate.*

No.	Name of disease.	Symptoms.	Preventive or remedial measures adopted.
1	Dherka	Swelling of throat, difficult breathing, frothing from mouth; no change in evacuations.	The part affected is scored with a red-hot iron and verdigris is applied. Vermilion mixed with mustard oil is rubbed on the throat, and gumbhur tree bark and black pepper, ground up together and mixed in cold water, is given to the animal to drink.
2	Chechuck or matah ...	Small-pox, fever, off feed, purging offensive and watery.	Superstitious fear generally forbids treatment; spices are burnt before them.
3	Dauk	Dysentery	Spirit is generally given.
4	Goomar	Belly swelling ...	A mixture of pounded hurdee phool, gola, babheerung, and black jeera is given.
5	Surdee	Cold accompanied by a discharge of water from nose and mouth.	Pepper, kafoor, and oil are rubbed into the nose
6	Aryas	Limbs tremble and animal can hardly move about.	Two and a half cups of water are sprinkled over the body.
7	Phoolbaga	Leaves off chewing the cud; mouth waters and belly swells.	Ghee, seemal cotton, and wine.
8	Hurna	Shivering fits ...	Right horn of the animal is slightly burnt.
9	Hakara	Hoofs of the cattle get sore.	The sore is washed with hot water and the animal is kept for several hours tied in muddy water.
10	Dakaha	This disease is called "itch" or "mange," and death is said to ensue in one day.	

DISTRICT OF GYA.

GYA.

Cattle Disease in the Gya District.

A report in Form No. 1, dated 8th January 1870, states that small-pox prevailed in 8 mouzahs of the Uttri Station between November 1869 and that date. The following statistics are given:—Stock 1,850, attacked 242 (13 per cent. of stock), died 180 (9 per cent. of stock and 74 per cent. of attacked), recovered 48, still ill 14.

A subsequent report, dated 19th February, states that 20 fresh cases had occurred in Uttri. Another, dated 23rd February, says that the disease had appeared in the Kheddar Serai Outpost, where 10 cattle were attacked.

The District Superintendent of Police and Magistrate write as follows on the 1st and 4th of March.

Memo. from MAJOR F. N. MILES, *District Superintendent of Police, to the Magistrate of Gya,*—(*No.* 180, *dated 1st March* 1870).

Early in December the existence of a disease among the cattle in the villages under the jurisdiction of Uttri Sub-division was brought to the notice of the Police. From time to time the Police have reported the increase or decrease (as the case might be) of the disease. The disease has confined itself chiefly to the Pergunnahs Purhul and Mohair, north-east of Gya, and it still exists, but not to such an extent as to demand, in my opinion, personal investigation by the Committee on the Cattle Disease. The natives call the disease *chechack*, which I understand to mean cow-pox; they believe it to be infectious; they can assign no cause as to its origin.

The symptoms are reported to be,—a rough and staring coat; small eruptions at the pores of the skin; eyes and mouth watering; hot body; labored breathing; shivering fits; swelled throat; yellow urine; thin and liquid evacuations. At the expiration of about 9 days, either death intervenes or the animal shows symptoms of recovery. No medicine is applied beyond native *poojahs*.

Memo. from A. PALMER, Esq., *Magistrate of Gya,—No.* 263, *dated 4th March* 1870.

Copy forwarded to the President, Cattle Plague Commission, with reference to his letter No. 165 of the 26th ultimo.

2. I may remark that the natives in this part are apt to designate every cattle disease by the term *chechack*, and it is moreover a fact that they are averse to any remedial measures being applied for the relief of the cattle attacked.

P. S.—Since writing the above, a report from Sudder Station Police has come in, stating that 27 head of cattle are suffering from the disease.

The last report received is dated the 10th of March. An inquiry by the Police showed that of 20 cattle attacked only one died, and that no cases had occurred for a week. No report was received subsequent to this, and it is evident that the disease was mild and sporadic.

DISTRICT OF CHUMPARUN.

Cattle diseases prevailing in the District of Chumparun, from information supplied by C. T. METCALFE, Esq., *Magistrate.*

Names.	Symptoms.	Treatment.
Khoorah	Infectious; hoofs become affected with sores; fever; mouth and tongue get covered with blisters; lasts several weeks.	Not stated.
Dakha	Infectious; throat swells and closes; evacuations stopped; the animal breathes painfully, and dies within 3 hours.	Purgatives are administered.
Gootee	Infectious fever; coat covered with blotches; bowels violently purged; tubercles form on tongue; throat closes.	Segregation; water *ad lib.*; bran mashes; sulphur fumigation; complete rest.
Phoolbaga	Stomach swells; evacuations stopped ...	*Simul* cotton seed, green mustard oil, and salt given internally.
Rusha, Anthee ...	Apparently rheumatic affections.	

DISTRICT OF SARUN.

SARUN.

Memo. from CAPTAIN H. M. RAMSAY, *District Superintendent of Police, Sarun,—No.* 359, *dated 28th October,* 1870.

In reply to his endorsement No. 1141, dated 31st August last, reports that the following figures are given by the Police as showing the number of cattle attacked, died, and recovered from *chechack or matah* :—

					Attacked.	Died.	Recovered.
1866	...	...	...	...	4,600	1,822	2,778
1867	...	...	...	...	4,510	1,930	2,580
1868	...	...	...	...	4,129	1,889	2,240
1869	...	...	...	...	5,041	2,461	2,580
1870	...	...	...	...	3,468	1,669	1,799
				TOTAL	21,748	9,771	11,977

Memo. from C. AGNEW, Esq., *Offg. Magistrate of Sarun,—No.* 1358, *dated* 29*th October,* 1870.

Copy forwarded to the President of the Cattle Plague Commission, No. 1, Sudder Street, Calcutta, for information, with reference to his letter No. 452 of the 29th August 1870.

BHAUGULPORE DIVISION,

COMPRISING THE DISTRICTS OF PURNEAH, BHAUGULPORE, MONGHYR AND SONTHAL PERGUNNAHS.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Purneah.	Historical Sketch ...	...	...	Page 225.
	A. Money, Esq., Commissioner of Bhaugulpore.	48	*8th February* 1864	*Selections, Bengal Government, p.* 18. *Describes the cattle disease which prevails in the district. States that it principally attacks cattle sent to graze in the Nepal Jungle.*
	G. Hayes, Esq., Deputy Magistrate, Arora Subdivision.	8	*23rd February* 1870	*Reports that small-pox—Mahamai, raged throughout his district during the months of October, November, and December* 1869.
	Ditto ditto ...	10	*4th March* 1870 ...	*Ditto ditto, with a description of the disease.*
	Ditto ditto ...	6	*29th April* 1870 ...	*Reports that cattle go to graze in the Morung in January and February and get cow-pox and foot and mouth disease, with which they return in June.*
	J. B. Worgan, Esq., Magistrate of Purneah.	504	*14th April* 1870 ...	*Reports that no cattle disease prevails in his district.*
	Ditto ditto ...	554	*30th May* 1870 ...	*Reports that in January and February of* 1868-69 *the disease was not prevalent to such an extent as to be reckoned "epizootic," but that there is disease, more or less, always.*
	The Villagers of Mudhoobanee.	...	17th June 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 227.
	Lalla Hurpersaud Sing ...	...	18th June 1870 ...	
	J. B. Worgan, Esq., Magistrate of Purneah.	1784	*14th September* 1870	*States that cattle disease has been on the decrease for the last 5 years.*
	J. S. Carstairs, Esq., Officiating Magistrate of Purneah.	1904	*15th October* 1870...	*Reports prevalence of pox in some villages of the Cusha Amour Thannah.*
	F. J. G. Campbell, Esq., Officiating Joint Magistrate of Kishengunge.	11	31st October 1870	A full report regarding cattle murrain in that Sub-division, p. 230.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Bhaugulpore.	*A. Money, Esq., Commissioner of Bhaugulpore.*	48	*8th February* 1864	*Selections, Bengal Government, p. 18. Reports the existence of chechack in the district.*
	Ditto ditto ...	333	*6th November* 1866	*Selections, Bengal Government, p. 128. Reports that in 1864 large numbers of cattle died in the various parts of this Division. The disease is gootee, and present throughout the year—the same epizootic described by Dr. Palmer.*
	S. Taylor, Esq., Magistrate of Bhaugulpore.	114	*25th January* 1870	*Reports that disease is very rare in his district, and none now exists.*
	Ditto ditto .	283	11th March 1870...	Reports that 30 cattle were taken ill, 20 died, and the rest recovered; also gives the symptoms, p. 231.
	Ditto ditto ...	679	*14th June* 1870 ...	*Reports that there has been no disease since 11th March.*
	T. J. C. Grant, Esq., Officiating Joint Magistrate.	1381	*4th November* 1870	*Reports outbreak of cattle disease, swelling of throat and diarrhœa, in Pergunnah Chye, causing great mortality since September.*
Monghyr.	*A. Money, Esq., Commissioner of Bhaugulpore.*	48	*8th February* 1864	*Selections, Bengal Government, p. 18. Reports the existence of chechack in the district.*
	H. E. Waller, Esq., District Superintendent of Police.	9 *T*	*10th January* 1870	*Reports prevalence of foot and mouth disease in some parts of the district.*
	T. T. Allen, Esq., Magistrate of Monghyr.	81	*9th February* 1870	*Reports that cattle disease, chechack, broke out and abated in Pergunnah Bullich, and gives a description of the disease; 2 cattle died out of 40. The symptoms detailed are those usually given.*
	G. W. Barlow, Esq., Magistrate of Monghyr.	166	*4th March* 1870 ...	*Reports that cattle disease, chechack has broken out at Guneshpore; 7 died out of 17 attacked.*
Sonthal Pergunnahs.	*A. Money, Esq., Commissioner of Bhaugulpore.*	48	*8th February* 1864	*Selections, Bengal Government, p. 18. Reports that chechack breaks out in the Sonthal Pergunnahs.*
	A. W. Cosserat, Esq., Assistant Commissioner, Deoghur	527	2nd April 1869 ...	Reports the outbreak of a distemper among cattle; remarks on their wretched state, want of food, and measures adopted, with apparent success, to limit the outbreak, p. 232.
	Ditto ditto ...	540	5th April 1869 ...	
	Ditto ditto ...	1157	6th August 1869	
	E. Stewart, Esq., Deputy Magistrate, Rajmehal.	2272	*18th December* 1869	*Reports that no epizootic of cattle disease exists in the Rajmehal District.*
	Evidence recorded in the village of Sahebgunge.	...	13th June 1867 ...	Page 235.

HISTORICAL SKETCH.

HISTORICAL SKETCH.

The information obtained from this Division is very meagre.

The Commissioner, A. Money, Esq., C. B., writing in 1866, states that the inquiries which he had made "lead to the conclusion that a disease called by the natives *gootee* or small-pox is never absent from this part of the country; that it attacks cattle during the winter months; and that it closely resembles the epizootic described by Dr. Palmer." Other reporters confirm the truth of this remark, and the periodical appearance of murrain in various parts of the Division at intervals of one or more years is a well understood and acknowledged fact, while data are wanting to determine when this periodical prevalence first commenced. The evidence obtained by the Commission in several villages around Purneah proves that the appearance of disease stretches beyond the recollection of living men.

1864. The inquiries made by order of the Government of Bengal in 1864 elicited the fact that *chechack* or small-pox was a well known disease among cattle in all the districts of the Division.

A practice prevailing in the district of Purneah was then brought to light which tends to provide for the frequent appearance and widespread of contagious disease. Cattle are yearly driven for grazing in January and February from every part of the district to the Morung or Nepal Terai, where they remain till the middle of June. Both rinderpest and foot and mouth disease are perennially present among the herds on these grazing grounds, and these diseases are carried back by the cattle returning to their several villages. This practice prevails very extensively in India—indeed wherever the grassy slopes which encircle the base of hills are without easy distance. Writing again in November 1866, the Commissioner reports that in 1864 an unusually large number of cattle died in various parts of the district. He also remarks that the foot and mouth disease is a common one.

An interval of several years now elapses in which no written or printed report exists of any murrain among cattle. That disease was absent from the Division is improbable in the highest degree, and the District Superintendent of Police of Purneah, in a letter dated 14th May 1870, states that the disease was on the decrease during the previous 5 years. This shows that it was prevalent in that district, and though reports are wanting from the others, it may fairly be concluded, from the analogy of other parts, that it might have been found in the other districts as well.

1868. From January to June 1868 both rinderpest (*matah*) and foot and mouth disease (*choam ussia*) are said to have attacked the cattle of Purneah, more particularly in the police jurisdictions of Kishengunge and Babungunge. These diseases prevailed among the

1869. cattle which went to the Morung. In 1869 the disease seems to have been brought back with the herds, and prevailed in the Arrourah Sub-division from October to December. In Monghyr also the existence of *chechack* is reported in December in the Bulleah Pergunnah, while in the Sonthal Pergunnahs rinderpest prevailed in the Nalla and Kurron police stations in March and April. The decline of the disease is attributed to the active efforts made by the police in the way of enforcing

1870. segregation and cleanliness. In 1870 the disease continued to prevail in the Bulleah Pergunnah of Monghyr in January and February, and was reported from the Chukye police station in March. Foot and mouth disease appears to have prevailed simultaneously. A few cases of *mahamai* are said to have occurred in the Kishengunge Sub-division in February, and rinderpest was found by the Commission to

HISTORICAL SKETCH

prevail in the neighbourhood of Purneah in June. The cattle had just returned from the Morung and brought the disease back with them. Another report was received in October, when the existence of disease was discovered in several villages of the Cushamour Thannah.

In February 30 cattle were attacked at Luchmunpore Ekdera, in the Bhaugulpore District, with a peculiar disease, not named, whose symptoms were,—shivering, falling down, stoppage of evacuations, flow of fluid from the mouth, and death in 3 or 4 hours (poisoning?); 20 of these cattle died. Further reports were at once solicited, but no seizures or deaths, in addition to these, appear to have taken place.

A later report from Bhaugulpore mentions that great mortality had been caused in the Luchmunpore police station and Chye Pergunnah of that district in September and October from swelling of the throat and diarrhœa, attributed by the natives to noxious grasses.

DISTRICT OF PURNEAH.

Modhoobanee village, visited 17th June 1870, 6 A. M.

This village is 2 miles out of the station. A male buffalo, 15 months old; condition fair; profuse discharge from eyes and nose, and some discharge from mouth; coat staring; well marked excoriations on the gums and buccal papillæ and floor of mouth; purging watery stools; off feed and great thirst; ill four days; ears drooping; muzzle dry; offensive. breath; animal very weak; eruptions inside thighs, anus, and under throat and neck, as also on cheek. — Case.

RAM TAHAL, DOOKHARAM MONDUL, NEELA GOALLA, LUCHMUN GOALLA, POSUN GOALLA, FOTEE GOALLA, WOOMROO GOALLA, of Modhoobanee, say,—that this is a large Hindoo village containing about 500 families owning 1,500 head of cattle, more or less, including buffaloes. A few of this number, say 250, are kept in the village throughout the year. The rest are annually taken to the Morung for pasture. The cattle are taken there in Pous (December) and brought back in Jeyt (May). In the hills the cattle are let loose day and night in the jungle. Other villages of this district send their cattle there at that time. The Morung jungles are nearly 60 miles distant from our village. There is at present not much disease among our cattle. Only two buffaloes of Ramdyal's are ill of *gootee*. During the stay of our cattle at the Morung there were no deaths from *gootee* there, but other villages lost several cattle from that disease. The *gootee* was raging in the Morung in the month of Bysak (April). The two animals now laboring under *gootee* came back from the Morung 15 days ago. Our opinion is that the disease, which is contagious, came from the Morung. Two years ago there was *gootee* in our village, and nearly 40 head of cattle died. The last attack commenced in Kartick (October), and disappeared at the latter end of Aughun (November). The disease appears in a place at intervals of 2, 3, 5 and 10 years. The disease has first commenced in our village. We do not separate the sick from the healthy, or the healthy from the sick. In the first place, we have not got sufficient room, and in the second place, one or two animals separated from the rest of the herd do not feel comfortable. The cattle in our place are not at all housed either in the rains or in the winter; they are kept in an open place day and night. When the cattle die we throw the carcasses into the field and the chamars take the skins. The vultures eat up the flesh. We do not take the price of the hides. Ramdyal had in his custody 200 head of cattle, and of that number he lost 18 two years ago; not one recovered. Before the month of October, 2 years, there was no disease; not even after the return of the cattle from the Morung. The animal that Ramdyal lost 7 days ago also had been to the Morung and came back with the other cattle. There are large cattle markets at Ronta, Doomga, and Foolberiah, but we go about in the villages and make our purchases. The price of cattle has increased 25 per cent. from what it was 10 years ago. The disease is always in the country, and I saw it when I was a boy. We are not aware of any party taking buffaloes or cattle to Assam or any other place. The people of Muzzufferpore take the cattle; but dealers generally come once a year here from the north-eastern corner of the district and make large purchases of cattle and buffaloes, and they take them away to different places. It has never happened that cultivation was suspended owing to the loss of cattle. There are large tracts of waste land here. There are chamars in our village. We have not heard or seen any case of cattle poisoning.

Evidence of villagers. — Stock. — Cattle driven for pasture to the Morung. — Description of the Morung. — Present disease. — Rinderpest in the Morung. — Disease imported thence. — Rinderpest in 1868. — History. — Separation not practised. — Why. — Housing. — Disposal of carcasses. — Loss in 1868. — Cattle markets. — Price of cattle. — History. — Exportation. — Cultivation. — Waste land. — Cattle poisoning.

A buffalo cow, 5 years old; condition fair; said to be ill since yesterday. The appearances observed are,—buccal membrane very much congested; effusion around eyelids; eruption on the throat; muzzle dry; ears drooping; congestion of vagina, with a small aphthous ulcer; conjunctivæ very much congested; general cutaneous congestion; extremities œdematous. — Case.

Morunga village, one mile out of the station.

A buffalo heifer, 2 years old; condition fair; owned by one Amrit (returned from the Morung 9 days ago); ill six days; slight discharge from eyes, nose, and mouth; subcutaneous effusion all round eyes; excoriations on lower gums; intense congestion of buccal papillæ; tongue much furred; breath offensive; most extensive cutaneous eruption—the most severe case hitherto seen. The eruptions are on the cheeks, inside throat, under abdomen, and inside thighs and over udder; the eruption is not scurfy and scabby as has generally been noticed, but the whole skin is deeply congested and covered, especially inside the thighs and under the throat, with fissures from which water oozes, and inside the near thigh along the groin (the side on which the animal lies down) there is a thin layer of purulent matter all over the skin, and here again the fissures are more like pits of pox and of a confluent type. The animal is very weak; all four legs are œdematous; purging blood and mucus; very offensive. The owner states that the animal is better, and believes that she will get well. No segregation has been attempted; the sick keep with the rest of the herd in the fields; 2 or 3 of the others have had the disease, and 3 or 4 others appear to be becoming affected. The people are aware that the disease is contagious, but as they have not the means of separating the diseased animals, and as a rule very few, not more than 10 per cent., of those attacked die, they never attempt to segregate. — Case. — Eruption. — Segregation. — Infection.

PURNEAH.

Gootee imported from the Morung.

8th June 6 P. M.

Gootee is said always to return with the cattle coming home from the Morung (pasture land at the foot of the hills). It is said that those which bring it with them generally recover, and those that become affected afterwards often die.

Sultanpore, 40 miles from Purneah, is famous for *goottee.* Mr. Cockburn, District Superintendent of Police, has heard that people sometimes give the scabs of *gootee* with a view of poisoning animals.

Evidence of Lala Hurprosad Singh.

Hide trade.

Advances.

Contracts.

Annual supply of hides.

Increased.

Price of hides.

Increased.

Gootee hides.

LALA HURPROSAD SINGH says,—I am Gomasta of Sheikh Munnoo Khansamah, who is a hide merchant. We get our supplies of hides from the villages in the District of Purneah and Siligoorie. We buy uncured hides in the open market, as also make advances to chamars. We make advances from Rs. 10 to Rs. 20, and take an agreement from them on stamped paper, wherein they bind themselves to supply a stipulated number of hides within a given time. Some of the chamars fulfil their contract in due time, others do not; a few run away with the money. My master has lost nearly Rs. 16,000 in consequence of the chamars not acting up to their contract. For the last 2 years we have been buying 3,000 hides annually; these include a few goat and sheep skins. Before that time we purchased only a thousand or less. The increase is owing to the increase in the price of hides in the Calcutta market. We cure the hides in our place and then send them by rail, as also by boats, to Calcutta, to Isakhana *arutdar* of Chinapara, in Calcutta. He acts as an agent and sells the hides for us; we allow him so much commission. Formerly it cost us Rs. 20 to 25 the score of *dagi* and *bedagi* hides; now the price has doubled. We sell a score for Rs. 50. We do not take *gootee* hides; they are almost useless, and are *dagi,* and we do not buy them. Last year we purchased 2 *gootee* hides. They were filled with pits, and they did not sell anywhere. There are in this zillah 7 or 8 hide dealers; some of them purchase as many as 25,000 hides each annually. I can show deeds granted by the chamars. We have got decrees against 2 or 3 chamars for the amount advanced to them, but we have not been able to execute the decree. They are poor and could not pay.

The following is a transcript and translation of one of the deeds alluded to by this witness :—

सही पैआरचन्द मोची
जा लिखा सा सही
निशान वन्द सहीकी बकलम
श० अल्लाबकश
शा० वकेमिया प० माजर

श्री शेख मन्नु खानसामा महाजन।

लि० पिआरचंद मोची पैशर रमानी मोची शा० शधुअैली परगने हबेली आगे मबलग पचीश रूपैआ नगद २५ दादन वरशा वर०, मा०, लाला शिकप्रसाद शाध मोहरी के लिआ करार कर लिख देतेहैं जो आवल मालहलाली गीरान् किस्ती ८ बेदाग बेकाट किस्ती किनी बत्तीस रूपैआ वा दोयम वा सियम वा पछेल रदी शावीक खाता मोताबिक कीमत मोजरा लेगें माल अन्दर दश रोज के लैन वजार गुदाममो दाखिल करेंगे अगर अवादा मोताबिक माल आदाय नही करें या कुछ कमती दाखिल करे तो जिस कदर रूपैया वाकी रहेगा हरजा उस कदरसे लेना लगाये के महाजन अपन जात बा जायदात से आदाय करेंगे और माल शिवाय माहाजन मजकुरके दिगर वगर बेचे तो हरजा उसका किस्ति रद पांच रुपैया का हिसाबसैं लगाय के जिस वख्त महाजन रूपैया वापस चांहेगें बिना उजुर दना करेंगे एहि करार सो रूपैया लिया तमसुक अपने खुसीसों लिख दाखिल किया के वाखत जा उनक काम आवे। ता० १७ जुन सन १८७० शाल अठारह।

गवाह	गवाह	गवाह
दशई मोची शा० लोवारा	शेख मियाजान शां० डातआ प० शीतो	

द० जैराम ईशर रामभरोस जिला पुरनिआ शा० कलकरती ता० १७ माह जुन शन १८७० मशीहा व० दुरगइ मोची प० नेरघु मोची शा० वनीकउआ प० एवेली करब

सही शेख महम्मद कन्दु जोली
खा शो मछी व दसखत

४० रुह वरश दर मन
काटोव

सही शेख महम्मद कन्दु
परगने खाजर है मगर
गलति है पर लाला
खातिखा सो क
रमे करदे
करते है

गवाह
दसख मोची ग्रा० लैन
बजार

गवाह
अग्रदी मोमन ग्रा० लैन बजार
प० दुबेली

गवाह

नं० २८१

तं० श्री योगिन्द्र विश्वास ई० जिला पुरनिया मों० कछारि कालेकटरी सन १८१० तां० ९ एप्रेल।

कलटुजी सेक शोनाउल्ला

सां० डोरिया प० श्रीपुर १ केता १।

श्री शेख मन्नु खानसामा महाजन।

लि० शेख महाम्मद कन्दु पेशर शेख सोनाउल्ला ग्रा० डोटीआ परगने हवेली आगे ७ जीसो मवलग दोग्रो २०० रूपैआ दादन वरग्रा बरग्रलेके करार करतेहैं वा लिखदेतेहैं जो औउल बा लोहा दाग फुरान किस्ती कीनी चौतीग्र रूपैया वा किस्तीरत इयाने रही किस्ती कीनी यन्दर रूपैया बा पक्केल कीस्ती कीनी साटै सात रूपैया के हिसाब सो कीमत मोजरा लेंगे और माल लगायत् माह अपरेल सन १८७० ग्राल अंगरेजी तक लैन बजार गुदाम मो दाखिल करदेंगे अगर करार मोताबिक दाखिल नही करे या कुछ कमति दाखिल करे तो जिस कदर बाकी हमारे पास रहेगा हरजा उस कदर से लेना लगायके महाजन मजकुर का अपने जाज बा जायदात से देना करेंगे और माल सिवाय महाजन हाजाके दूसरेके हाथ वेचे तो हरजा उसका किस्ति रद पांच रूपैया का हिसाब सो लगाय के जिस वखत महाजन चाहेंगे विना उजर दाखिल करदेंगे इस करार पर रूपैया दादन लिया तमसुक अपने खुशी बा राजी मों लिखि दिया कि औवखत जो उनके काम आवे ता० १० माह अपरेल सन १८७० ग्रा० अंगरेजी मोकरर यह जो परगने हवेली जो लिखा गआ सो भुलसे परगना स्रिताउहै वा आजीव ता० सन मुदर।

PURNEAH.

To—Sheikh Mannu Khánsámá, Merchant.

The writing of Piárichand Mochí, son of Ramáni Mochí, of Sadhu-auli, in the Pergunnah of Haveli, showeth,—

I have taken the sum of Rs. 25 as an annual advance from Lálá Siva Prosád Sádh, mohurrir, and I give in writing this engagement that I shall supply, in instalments of eight, first class (*awal*) goods slaughtered, without mark, without *rents*, at 32 Rupees, or second class (*doem*), or third class (*siyam*), taking the price at the rate recorded in the old rejected account books (*khátá*). I shall deliver the goods within ten days at the Line Bazaar Godowns. If I do not deliver goods within the contract time, or deliver in smaller quantity, then the merchant can recover the amount of the loss from the balance of money in his hands or from personal (*ijut*) or real property. Further, if I should sell goods to others besides the merchant named, then I shall, calculating the loss at Rs. 5 per instalment, pay the amount without any objection whenever the merchant will demand the money. I have taken money under this engagement, and submitted a bond written of my free will that it may be of use to him.

Dated 17*th June* (*sun*) 1870.

Witness, DASAYI MOCHI, of Lábará.

Witness, SHEIKH MEAJAN, of Dotowa, Pergunnah Sitan.

Witness,

Signature of Piárichand Mochí.

Whatever is written is all right.

Signature by mark with the pen of (*i. e. per*) *Sheikh Allahbukosh, of Bakemiyah, in Pergunnah Májar.*

From F. J. G. CAMPBELL, Esq., *Offg. Joint Magistrate of Kishengunge, to the Magistrate of Purneah,*—(*No. H, dated* 31*st October* 1870).

With reference to your memo. No. 1885 of the 10th instant, I have the honor to submit the following report on the disease amongst the cattle along the line of the Ganges and Darjeeling Road north of Kishengunge.

2. I travelled along the road stage by stage, according to the programme intimated to you in my letter of the 17th instant, No. 290, and the information now communicated is as reliable as direct personal enquiry could make it, though its value is of course affected by my want of professional knowledge.

Names.

3. The diseases which, as I have been informed, prevail are three, called in the vernacular—

I.—*Gootee, matah.*

II.—*Kunjala* or *khorala.*

III.—*Chapchapia* or *chamatsia.*

Season.

4. Cattle are annually liable to be attacked by disorders from the month of April till the end of October or the close of the rains, and the testimony has been general that the present year has not been exceptional in this sub-division, at all events in respect of either the number of cattle attacked or the virulence of the diseases. I examined the Overseers and Thikadars of the Bullock Trains owned both by Government and the Darjeeling Carrying Company and several villagers, and at a village four miles from Illuabaree I personally inspected three cattle said to be attacked with *matah* or *gootee.*

Symptoms.

5. I shall now describe the symptoms as I have learnt them. In *gootee* the animal first becomes depressed and refuses food, either solid or liquid; it is next attacked with alternate hot and cold fits; the eyes, nostrils, and mouth next become affected, and discharges from them take place, and the tongue swells; pustules generally break out, but are sometimes absent; the urine is passed red; the fæcal evacuations are watery and clay-coloured; the glands of the throat swell on both sides under the jaws, and this swelling, if excessive, generally proves fatal. The crisis of the disease is reached within 7 to 21 days.

6. In *kunjala* the symptoms are similar to the above, except that, instead of a general eruption over the body, ulcers break out on the cloven part of the hoofs and on the inside of the mouth.

7. In *chapchapia* the symptoms are simply tumours and inflammation of the soft parts of the hoofs, refusal of food, and incapacity of locomotion.

8. Whether the two former are merely varieties of the same disease, or distinct disorders, I am of course unable to say. The natives consider them distinct; at all events, I think the third disorder has no connection with the others, as the majority of the symptoms are absent.

8½. The disorders are fatal in the order in which they have been mentioned.

9. There can be no doubt that the two first are highly contagious; whether the last is so or not I have not been able to ascertain satisfactorily, owing to the want of a habit of careful observation amongst the natives. PURNEAH. Contagiousness.

10. As to the *origo malorum*, I could get no information beyond the assurance that "Alla knows;" but by universal consent the hills and Terzai in the neighbourhood of Darjeeling and Julpigoree are the *foci*, the disease each year regularly taking a direction from north-east to south-west. Origin.

11. The people are fully alive to the advantages of segregation and carry it out on a small scale, but the majority are too poor and apathetic to thoroughly enforce it. A man with a few thatched huts and cultivated patches of land is obliged to bring his cattle to the village *hanja* or grazing ground, and the infection is thus spread. Something might be done if the chowkeedar of every village, on the outbreak of the disease, were compelled to report it, and the villagers to set aside a portion of the general grazing ground for the reception of diseased cattle and the burial of the carcasses of the dead ones. Officers in their cold weather tour may try preservatives, but the diseases are not then rife, and the promises made by the villagers would be quite certain of non-fulfilment the next hot weather and rains. On the other hand, any penal enactment on the subject would create a more formidable theme for false and malicious charges than that already afforded by Sections 352 and 143 of the Penal Code. Segregation.

12. I have distributed the instructions of the Cattle Plague Commissioners pretty freely. These papers and inquiries were at first regarded with suspicion, as if there was an *arriére pensée* of some tax underneath them.

13. As a rule, no curative treatment is adopted in any of the diseases. Sometimes a *ghuni* or inoculator is employed, who goes through some gibberish of an incantation and sometimes administers "Bhela," oil or turpentine, and a weed called *aimjur* (of which I enclose a specimen), but generally rests content with his incantation. The more intelligent natives use local applications to the sores,—of bluestones, asafœtida, and tobacco; but no one to whom I spoke appeared to have particularly clear notions of the rationale of these remedies, or in what their curative properties and effects consist, and how they operate. Treatment.

14. The late excessive rain has caused great mortality amongst the cattle all along the road, simply from exposure and want of shelter. They have not died from any of the diseases under report.

15. In conclusion, I have to express my obligations to Ahmed Hossein, Mostazeo of Bolonjha, who procured me much information, and promised to have the instructions of the Cattle Plague Commissioners translated into the local papers and circulated freely amongst his ryots.

DISTRICT OF BHAUGULPORE.

From the District Superintendent of Police, Bhaugulpore, to the Magistrate of Bhaugulpore,—(No. 136, dated 28th February 1870).

On the 22nd February 30 cattle were taken ill at Luchmunpoor Ekdera, 8 miles north of Colgong Station, out of which number 20 died the same day and the remainder recovered.

The symptoms appear to have been,—

1*st*.—A shivering fit, ending shortly in the animal falling down.

2*nd*.—Stoppage of urinary and fæcal evacuations.

3*rd*.—After death a flow of fluid from the mouth.

4*th*.—Death ensued generally within three or four hours from the seizure.

5*th*.—The name of the disease is unknown, and it has not, so far as known, extended or continued. No remedial measures were adopted.

This report is made with reference to the Magistrate's memo. No. 1327, dated 21st December last, and this Office memo. No. 61 of 22nd ultimo.

DISTRICT OF SONTHAL PERGUNNAHS.

From J. W. DALRYMPLE, Esq., *Commissioner of the Bhaugulpore Division, to the Assistant Commr. of Sonthal Pergunnahs, Deoghur,—(No. 19, dated 13th April 1869).*

I have the honor to acknowledge the receipt of your letters, No. 527 of the 2nd instant and No. 555 of the 6th instant, with enclosures, and to intimate my entire approval of the orders you have given to your Assistant at Nalla, with a view of checking the epidemic which has broken out among the cattle there.

SONTHAL PERGUNNAHS.

From A. W. COSSERAT, Esq., *Assistant Commissioner, Sonthal Pergunnahs, to the Commr. of Sonthal Pergunnahs, Bhaugulpore,—(No.* 527, *dated 2nd April* 1869).

I have the honor to report for your information that the rubbee crops of this Division have all been gathered in, and the grain brought in the market. The slight fall in the prices is indicative of a fair result from the harvest, and, I may say, puts an end to any fears about actual scarcity. No signs of any suffering from scarcity have shown themselves anywhere. I regret, however, to report the prevalence of cholera, almost in an epidemic form, in the town of Deoghur itself, and its existence in some degree throughout the district, but it has not been reported among the laborers on the Chord Line. I purpose making a tour throughout the length of the line, and to confer with the engineers and the gentlemen employed by the contractors as to the best measures for preventing anything like a panic, which will prove most disastrous among the imported laborers should cholera break out among them, a thing that may be expected. In Deoghur it has been bad enough to cause nearly a panic. Some suitors before the Courts have been attacked and died, and generally people are afraid to come to the place.

2. I have on my own responsibility organized a conservancy establishment of sweepers to thoroughly clean and sweep the place, with a view as far as possible to check the disease, but the excessive heat of the weather, and the comparative cleanliness of the place, leave me little hope of succeeding without a change in the weather and some good fall of rain. But little has been done towards treating those who are attacked, from the unwillingness of the patients to be taken to hospital, and the anxiety of the relatives of the people attacked to be near them and attend them; and it is next to impossible that the patients should each be visited at their homes.

3. Among the cattle too, in the Nalla Division, a virulent distemper has broken out, which is very fatal in its effect and is spreading fast. The cattle at this season of the year are most wretched objects from want of sustenance, as all the grass is parched up. They are barely able to crawl about from place to place, picking up the few *mohooah* blossoms that are left after the owners of the trees have picked up what they could—blades of grass here and there—and in their weak condition they are unable to withstand any sickness, and die off rapidly. All that can be done has been done by the Assistant Superintendent and Sub-Assistant Commissioner of Nalla to try and persuade the owners to keep the diseased cattle separate from the healthy, but the task is an extremely difficult one, owing to the apathy of the owners themselves. I have instructed the Sub-Assistant Commissioner to have recourse to small fines when his orders are wilfully and glaringly neglected. If this disease spreads further, I fear the worst consequences for the ryots; but although the prospects are gloomy, I am bound to say that serious damage has not yet been done, except in one or two villages.

Want of food

Segregation.

4. I would solicit your early instructions on the subject.

From A. W. COSSERAT, Esq., *Assistant Commissioner, Sonthal Pergunnahs, to the Commissioner of Sonthal Pergunnahs, Bhaugulpore,—(No.* 555, *dated 6th April* 1869.)

In continuation of my letter No. 527 of the 2nd instant, reporting the outbreak of an epidemic among the cattle in the Sub-division of Nalla, I have the honor to enclose copy of my letter No. 540 of the 5th instant, containing certain instructions to the Sub-Assistant, Commissioner of Nalla, for your approval and sanction.

From A. W. COSSERAT, Esq., *Assistant Commissioner, Sonthal Pergunnahs, to the Sub-Assistant Commissioner of Nalla,—(No.* 540, *dated 5th April* 1869.)

Distemper among cattle in Nullah Sub-division.

In acknowledging receipt of your demi-official letter No. O of the 3rd instant, reporting the outbreak of a distemper among the cattle in some villages in your Sub-division, which is very fatal in its effects, I have the honor to state that I approve generally of the measures that you have adopted. The Assistant Superintendent, who visited Nalla at the close of last month, also reports the epidemic among the cattle, and having adopted similar measures for preventing its spread.

2. I would request your visiting a village in which the disease is worst,—some one in which the preventive measures would be more likely to be needed than in any other,—and personally supervising these measures, and also inquiring into the nature and symptoms of the complaint, and if it can be ascribed to any known cause; if not, what the popular belief is among the cattle owners as regards the cause of it.

3. The cattle in the Nalla Sub-division are, I suppose, like those in the other Divisions of the Sonthal Pergunnahs, entirely dependent on grazing for sustenance, and it would be impossible to shut them up and feed them, as the means of the owners would not permit of it. Under these circumstances, some measures should be adopted to keep them apart while out grazing, as well as when they are locked up for the night. You should therefore, on your visit to the village, have an enclosure made round a tree, and the affected cattle kept in the enclosure for the night; no possible harm can come to them by exposure at night in this weather. The enclosure should be sufficiently far from the village where the other cattle are to be kept, and on the side where they would have to go out for the purpose of grazing. The watering-places for the healthy cattle should be separated from that used by the affected cattle, and the grazing ground should also be defined by a boundary.

SONTHAL PERGUNNAHS.

Segregation suggested.

These things should be publicly done, and in the presence of the heads of villages and the principal cattle owners, and the sheds in which the cattle are kept cleaned with dry-earth strewn an inch or two deep all over the floor; this will not take more than a few baskets full of earth obtained from an adjoining field, and which the owners can get themselves. These men should be given clearly to understand that any infringement of the orders will be taken severe notice of, and that you expect their assistance in having them carried out, and where there is neglect that similar notice will be taken of it.

Sanitary measures suggested.

The chowkeedars of the village should be required to report regularly whether the orders are carried out, and whether the disease increases or is checked, also the number of deaths: their reports will of course go to the police stations and outposts, and you will get them in due course.

Chowkeedars to make periodical reports.

It is very likely that two or more adjoining villages may have the cattle in them suffering; under these circumstances it should be your object to give out portions of grazing grounds to each village, so that the grazing grounds of affected cattle should not adjoin those of the healthy cattle: for instance, the villages of A and B may be situated north and south of each other; if the diseased cattle from A were sent to the south of A, those from B ought to be sent north of B. This arrangement should be followed as far as possible.

Mode of segregation.

Your utmost endeavours should be used to induce the people to take kindly to these measures, and it should not be enforced with the severity of harshness, for it is not at all unlikely they may think it is an interference with a concern of theirs. Such, however, is not the case; it is on public grounds the measures are adopted.

When you visit the village, you should give due notice to the Head Police Officer within whose jurisdiction it is situated, and direct him to attend on you, and after he has seen your action in the matter, he can safely be entrusted with having the same measures carried out, under his own supervision or that of his subordinates, in the other villages where it may be necessary.

Particular care should also be taken to warn people in whose village there is no disease, not to allow their cattle to mix with those in a village that are suffering; and for this purpose, directly the disease makes its appearance, the villagers or owners should give notice to their neighbours.

Quarantine.

It should be impressed on the heads of the villages that you hold them responsible to you for the due discharge of their duties in this respect.

I have sent a copy of this letter to the Assistant Superintendent of Police for his information and guidance, and I have no doubt he will give you every assistance in his power.

Memo. from J. W. DALRYMPLE, Esq., *Commissioner of the Bhaugulpore Division,*—(*No.* 318, *dated* 21*st August* 1869).

Forwarded to Government, with reference to orders No. 237 of 24th April last.

From A. W. COSSERAT, Esq., *Assistant Commissioner of the Sonthal Pergunnahs, Deoghur, to the Commissioner of the Bhaugulpore Division,*—(*No.* 1157, *dated* 16*th August* 1869).

With reference to your office memorandum No. 58, dated 1st May 1869, forwarding Government letter No. 237 of the 24th April, on the subject of the late outbreak of epidemic among the cattle in the Sub-division of Nalla, I have the honor to report as follows.

2. Mr. Dawson, Assistant Superintendent of Police, had occasion to visit Nalla about the end of March last, and reported on the 26th that an epidemic had broken out among the cattle, and that it was very fatal in its effects. To use his own words, he says, "I learnt that

SONTHAL PERGUNNAHS.

cow-pox had broken out among the cattle in the Nalla Sub-division, and that numbers of them were dying. There is no outward appearance of the disease, but I presume from experience that the natives know at once that they are attacked." "The animal attacked," he further reports, "dies, usually, in three or four days."

Segregation not practised by people.

3. As is usual among the natives of the class, they make no effort to cure or prevent the spread of the disease, which the Assistant Superintendent reports was the case among the people whose cattle were suffering at Nalla. He adds that he found diseased cattle and healthy locked up in the same pen, and his recommendation that they should be separated, and that the shed in which disease had broken out should be abandoned until it was purified, was not appreciated. His suggestion was met, he says, by the excuse that cattle not housed were more liable to be attacked; whether this was a mere excuse or not I am unable to state; but if it were true, it is a peculiar and remarkable feature in the distemper or rather the susceptibility to take it, and which was found to exist in the great horse epidemic that broke out at the Cape not many years ago; but I believe that the assertion was not true, and was made more by way of framing an excuse to evade the orders, for cattle were actually exposed in the open air so long as the disease lasted, as will be seen hereafter, and the result proved it to be a proper measure.

Measures adopted.

4. Very properly, the Assistant Superintendent acted promptly in the matter, and on his own responsibility issued the following instructions, which were energetically enforced:—

1*st*.—To persuade the owners of cattle to keep them out in the open plains, and carefully to separate all those that showed any symptom of the disease.

2*nd*.—To whitewash or in some other manner to render sheds occupied by cattle in which disease had appeared innocuous.

3*rd*.—To give strict orders to prevent the cattle of any village in which the disease had appeared from wandering among the cattle of other villages, and if they do not obey the instructions to proceed against them under the Indian Penal Code for such neglect.

5. Subsequently Mr. Fraser wrote demi-officially and gave the same information, and reported having adopted the same precautionary measures, *viz.*, keeping the diseased cattle apart from the healthy. Mr. Fraser from the first wrote confidently on the subject, and seemed to think that the precautionary measures could be successfully carried out.

6. The outbreak was reported to you by this office letter No. 527 of the 2nd April last, and the instructions I issued to the Sub-divisional Officer and Assistant Superintendent of Police, conveyed in this office letter No. 540 of the 5th April (a copy of which was forwarded to you with this office letter No. 555 of the same date), met with your approval. I need not therefore recapitulate them here, as they are known to you. These form the precautionary measures that were observed. I was unable to give any instructions about the treatment of the sick animals, the greater part of which died after being attacked.

7. The treatment adopted by the natives was to give the cattle suffering a mixture of resin and cotton seed. If this was followed by excessive shedding of tears it was a favourable symptom, and the animal generally recovered.

Result.

8. The precautionary measures adopted were most actively carried out, and it is satisfactory to report that as early as the 13th April, that is, seventeen days after they were resorted to, a perceptible decrease in the disease was noticed, and it gradually but surely died out.

9. The disease made its appearance in the south of the Nalla Sub-division in the villages of Amchatour, Bohoopore, Amlajaree, Dolabur, Paharpore and Mohailpore. It also showed itself in a very slight and mild form in the villages of Madhopore and Bharadee, in the jurisdiction of the Kurron Police Station, which adjoins the Nalla Sub-division. The symptoms of the disease, which was most infectious, were as follows:—When first attacked the animal was afflicted with purging, swelling in the throat, water issuing from the eyes and mouth, and a general lassitude, and refused food. The discharges were in all cases very offensive.

10. The measures adopted were a complete success, and by the end of May the disease had disappeared entirely.

11. The total number of cattle that died from the disease is stated, as near as can be, at 714. The village of Dolabur, Amloogoora, Seetamary, Amlachatoor, and Bahoopore suffered most. Mr. Fraser personally superintended the measures adopted for the segregation of the diseased cattle in four villages.

12 The loss has not been such as to affect the agricultural operations of the people.

13. The causes of this disease are not known for certain. It is called *bussunto*, and appears annually, but in a very mild form, about the same season of the year. It is believed that the want of proper food, and the substitution of bad food in consequence, is principally the existing cause. The severe drought this year greatly aggravated the distemper, and it commenced with alarming virulence.

14. I do not think I am far wrong in saying that if it had not been for the very active steps taken to separate the diseased animals from the healthy, and other necessary precautions, that the loss of cattle in the district would have been very great, and it would have materially affected the agricultural operations of the district. Credit is due, for their prompt measures, to Messrs. Dawson and Fraser, and the Sub-Inspectors at the Thannahs.

15. No measures were taken to dispose of the dead animals or for the destruction of their hides.

Sahebgunge village, visited 13*th June* 1870, 6 P. M.

Sahebgunge Station is on the banks of the Ganges. Saw 9 cattle belonging to the Serang of the Caragola Ferry Steamer *Casseejee*. Man in charge states that *gootee* or *jugudumba* attacked the cattle of this neighbourhood 3 years ago; of his present 9, 6 were then in his shed; 1 only of the 6 was attacked and recovered, and is now in the shed; the symptoms described were those generally given, but eruptions were especially remarked by this man. The attack commenced in the month of June. The man has not heard of any disease since that time.

RAJSHAHYE DIVISION.

COMPRISING THE DISTRICTS OF RAJSHAHYE, BOGRAH, DINAGEPORE, MALDAH, MOORSHEDABAD, PUBNA, AND RUNGPORE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	HISTORICAL SKETCH ...	...	...	Page 239.
Moorshedabad.	*R. J. Scott, Esq., Commissioner, Rajshahye.*	24 *Ct.*	22*nd February* 1864	*Selections, Bengal Government, p.* 19 *States that a disease resembling small-pox is prevalent in the district.*
	W. Le F. Robinson, Esq., Officiating Commissioner, Rajshahye.	26	18*th January* 1867	*Selections, Bengal Government, p.* 146. *No disease has prevailed since* 1864.
	J. Anderson, Esq., Officiating Joint-Magistrate of Moorshedabad.	29	12*th January* 1870	*Reports the existence of a few cases of bussunto in the village of Bokahara within the Police Station Jellinghee.*
	Baboo Taraprosad Chatterjee, Deputy Magistrate, Jungipore.	669	23*rd May* 1870 ...	*Reports outbreak of cattle disease in Samal, Mirzapore Thannah.*
	F. G. Millet, Esq., Magistrate, Moorshedabad.	792	15*th June* 1870 ...	*Report the outbreak of cattle disease in Belooriah, Mirzapore Thannah.*
	Ditto ditto ...	805	*Ditto* ...	
	Baboo Taraprosaud Chatterjee, Deputy Magistrate.	822	17*th June* 1870 ...	*Describes the disease prevalent at Samal and Belooriah, and states that it has disappeared.*
	Ditto ditto ...	855	23*rd June* 1870 ...	*Reports outbreak at Khalilpore in Mirzapore Thannah.*
	Ditto ditto ...	210	30*th June* 1870 ...	*Further report on same subject.*
	Ditto ditto ...	211	*Ditto* ...	*Reports a fresh outbreak at Belooriah.*
	Weekly Returns ...	...	14th June to 5th December.	[These returns are summarised at p. 243.]
	Villagers of Beercoonda ...	..	19th June 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 245.
	Ditto of Belooria ...	...	Ditto ...	
	Ditto of Bansbelooria ...	...	20th June 1870 ...	
	Ditto of Dohalee ...	...	Ditto ...	
Rajshahye.	*R. J. Scott, Esq., Commissioner, Rajshahye.* *J. Cockburn, Esq.*	24 *Ct.*	22*nd February* 1864	*Selections, Bengal Government, p.* 19. *Reports that cattle small-pox was prevalent* 8 *years ago. Mr. Cockburn gives a table of cattle diseases.*
	T. Norman, Esq., Joint-Magistrate of Rajshahye.	71	27*th January* 1870	*Reports outbreak of "bussunto" in November* 1869 *at village Futtongapara—*43 *deaths.*
	W. L. Heely, Esq., Magistrate, Rajshahye.	120	28*th June* 1870 ...	*Reports outbreak of "bussunto" in* 8 *villages of the Nattore Sub-division, Singrah Thannah—*65 *deaths; symptoms as usual.*

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Bograh.	*W. Le F. Robinson, Esq., Commissioner.*	26	*18th January* 1870	*Selections, Bengal Government, p. 146. Reports prevalence of cattle disease in 1866; gives careful detail of symptoms.*
	T. F. Bignold, Esq., Magistrate, Bograh.	122	21st January 1870	Forwards an elaborate statement prepared by the Police showing the prevalence of cattle disease in the district, p. 248.
	District Superintendent of Police's Tabular Return.	...	...	
	T. F. Bignold, Esq., Magistrate, Bograh.	275*Ct.*	*23rd February* 1870	*Reports severe outbreak of cattle disease at Sheriakandee Police Station.*
	Ditto ditto ...	506	6th April 1870 ...	Describes the symptoms of the cattle attacked at Sheriakandee, p. 249.
Maldah.	*R. J. Scott, Esq., Commissioner.*	24 *Ct.*	*22nd February* 1864	*Selections, Bengal Government, p. 19. Reports the periodical prevalence of cattle disease in Maldah.*
	Baboo Umbica Churn Rai, Deputy Magistrate, Maldah.	15	*11th January* 1870	*States that no cattle disease prevails in the district.*
Dinagepore.	*R. J. Scott, Esq., Commissioner of Rajshahye.*	24 *Ct.*	*22nd February* 1864	*Selections, Bengal Government, p. 19. States that the disease prevails in the district annually.*
	W. R. Larminie, Esq., Magistrate.	30	*20th January* 1870	*Promises to furnish information in two months.*
	E. A. Westmacott, Esq., Magistrate.	299	20th April 1870 ...	Forwards a statement in Form No. 1 of disease prevailing in the district and the mortality during the two preceding years, p. 249.
	Magistrate of Dinagepore...	477	*4th June* 1870 ...	*States that cattle plague exists in the district in a sporadic form.*
Rungpore.	*R. J. Scott, Esq., Commissioner.*	24 *Ct.*	*22nd February* 1864	*Selections, Bengal Government, p. 19. States that a number of cattle die every year of small-pox, followed by diarrhœa.*
	W. Le F. Robinson, Esq., Commissioner.	26	*18th January* 1867	*Selections, Bengal Government, p 146. States that cattle disease has raged at intervals during the last two years.*
	T. Norman, Esq., Officiating Magistrate.	520	*21st June* 1870 ...	*Report that cattle disease appeared in every part of the district in January and February* 1868-69, *and that there was no export of cattle at that time.*
	District Superintendent of Police.	225	*18th June* 1870 ...	
	F. G. Millet, Esq., Magistrate, Rungpore.	695	9th August 1870...	Forwards a detailed statement of the prevalence of cattle disease in 1868 and 1869, summarised at p. 249.
Pubna.	*W. Le F. Robinson, Esq., Commissioner.*	26	*18th January* 1867	*Selections, Bengal Government, p. 146 Cattle disease well known in the district.*
	Magistrate of Pubna. ...	7	*5th January* 1870	*States that cattle disease is not known in the district.*

HISTORICAL SKETCH.

Abundant evidence exists that cattle murrain visits the districts of this Division frequently and severely, though a very continuous or detailed account of its prevalence cannot be given; neither can any date be assigned to its first appearance. As early as 1832, Dr. Macpherson, then Superintendent of Vaccination at Moorshedabad, observed that cattle were liable to what is called *matah*. There was at this period a very universal endeavour made to discover natural cow-pox. The supply of vaccine lymph obtained from England was unsatisfactory in its results, and it became known that cattle were liable to an eruptive affection to which the natives applied the same name as they applied to human small-pox. What could this possibly be but cow-pox. Dr. Macpherson accordingly selected some cows suffering under this malady, clothed them in blankets, and removing the crusts which he found developed on the udder on the 9th and 10th days of the disease, used these to vaccinate children, and succeeded in producing a vesicle, to all appearance vaccine. From the vesicle so produced lymph was taken, sent all over India, and used for vaccination. This discovery took the medical men of India by surprise, and produced no little agitation at the time. Efforts were made elsewhere to imitate Dr. Macpherson's practice, and the experiments conducted in Sylhet, described under the Dacca Division; and the observations of Dr. Duncan Stewart in Calcutta, presented in the papers relating to the Presidency Division, were the offspring of the Moorshedabad experience. Dr. Stewart, however, while sharing in the admiration and appreciation accorded to Dr. Macpherson's "valuable discovery," makes some very suggestive remarks upon the subject. This sagacious physician wonders why the lymph of the vaccine vesicle of the cow was not used instead of the crust, and remarks that the stages of progress of the pock were not minutely described. We now know that if the cases selected by Dr. Macpherson were what is now called *matah* in the cow—and this is exceedingly probable, for the murrain seems to have been extensively prevalent in the district—he might look in vain for a well defined vesicle or pustule, and that the eruption is essentially crusty or scabby *ab initio*. The most remarkable peculiarity noted in describing the effects of the inoculation of human beings with these crusts is,—that the effects were more severe than those caused by the usual vaccine virus, and this was looked upon as rather an advantage, inasmuch as it recommended the procedure to the natives of the country, who had hitherto been accustomed to the more violent manifestations of variolous inoculation. In Calcutta the lymph soon became mixed up with that hitherto in use, and there is an absence of accurate detail as to its behaviour and results in other places. It was, no doubt, soon superseded by the regular supply, and it does not appear that, with the exception of the unfortunate Sylhet experiments, any effort was made at Moorshedabad or elsewhere to repeat Dr. Macpherson's practice.

1832.

The following precis of Dr. Macpherson's proceedings is extracted from the "Transactions of the Medical and Physical Society of Calcutta," in which these and other interesting papers received by the Medical Board on this subject are printed:—

An account of some experiments relative to vaccination, by G. G. MACPHERSON, Esq., *Superintendent of Vaccination, Moorshedabad,—dated 29th November* 1832.

Dr. Macpherson quotes a circular from Medical Board, dated 4th June 1831, to the effect that public confidence has been so shaken in the powers of vaccination, owing to its failing in many instances to protect against severe and even fatal attacks of variola, that it is desirable to institute a series of investigations and experiments for the purpose of regenerating the virus, and restoring it to its pristine activity, if so be that it has degenerated.

Board's Circular.
Efficacy of vaccination.

HISTORICAL SKETCH. Dr. Macpherson remarks that in his own experience he has invariably found vaccination prophylactic against variola, and cites instances of vaccination, induced with difficulty and imperfectly, modifying a subsequent attack of small-pox. He also suggests that much spurious vaccination is practised.

He states that small-pox prevailed severely in Moorshedabad and its vicinity in May, June, July, and August 1832; he tried to induce variola in cows by inoculation and covering with contaminated blankets, but this was only followed by fever, and a few ulcers on the abdomen in one case. Two cattle inoculated from these ulcers showed no symptoms of disease. He next vaccinated two cows, which fevered, and one had on the 5th day a vesicle from which two children were inoculated, but only spurious vaccination was induced. He proceeds,—" on inquiry amongst the natives, I learnt that the cows in Bengal are subject to a disease which usually makes its appearance about the latter end of August or early in September to which the same names are given as to variola in the human subject, namely, *bussunto*, *matah*, or *gootee*, and on the 24th of August I was informed that several cows belonging to a native of Moydapore were affected. I consequently determined on again attempting to regenerate the vaccine virus from the original source. The animals which were at first affected, amounting in one shed to 18 or 20, had been for a day or two previously dull and stupid. They were afterwards seized with distressing cough, and much phlegm collected in the mouth and fauces. The animals had apparently at this time no inclination for food, or at all events they were unable to satisfy their hunger. Their suffering seemed to be greatest on the 5th and 6th days, when there was considerable fever, and pustules made their appearance all over the body, especially on the abdomen, which terminated in ulceration; the hair falling off wherever a pustule had run its course. The mouth and fauces appeared to be the principal seat of the disease, being in some instances one mass of ulceration, which in all probability extended to the stomach and alimentary canal. In those cases where the mouth was very much affected, the animals died apparently from inanition; whereas in those cases in which the power of mastication or even of swallowing was retained, recovery was much more rapid than might have been expected, from the previous severe sufferings and reduced state of the animal. The mortality may be calculated at from 15 to 20 per cent."

Variolation of cattle, unsuccessful.

Animal vaccination failed.

Bussunto.

Symptoms.

He next remarks on the severity of this disease as compared with cow-pox, as described at home, on the suppression of the secretion of milk in India, and on the non-liability of human beings to infection—a belief firmly held by natives. He now selected two cows belonging to one of his vaccinators suffering from *matah*, covered it with blankets, leaving the teats and udder exposed, and " on the 7th day two small pustules appeared on, the teats of one, which dried up on the 10th, and the crusts were removed on the 12th day." From these 11 native children were inoculated. In six no effect whatever appeared; two had very slight inflammation on the 3rd and 4th days; two had considerable local inflammation and slight heat of surface on the 5th, 6th, and 7th days, but no vesicle formed, although there was marked induration round the puncture. " The remaining child's arm was slightly inflamed on the 4th morning, and a vesicle was apparent the next day, which continued to increase till the 9th day, when I was much gratified to find that it assumed all the characteristics of the vaccine." The child, 5 months' old, suffered much from fever for 4 days. In subsequent vaccinations the symptomatic fever was particularly severe. The disease was now disseminated. Two of the children thus vaccinated were inoculated with small-pox, and both were found protected; 5 children thus vaccinated were exposed to small-pox infection without result. Several European children were successfully vaccinated. During the prevalence of *matah* among the cattle no case of small-pox among human beings occurred.

Comparison with cow-pox.

Inoculation of children.

Effects.

Protectiveness.

The disease *matah* again broke out severely in Moorshedabad in April 1833. The experiments above described were again tried, but Dr. Macpherson failed to obtain pustules. The mortality among cattle was great. A child was inoculated from a pustule on the udder of a cow. Slight inflammation of the arm ensued on the 4th and 5th days—no other result. There was no coincident small-pox among men, and no other animals were affected.

1833.

In 1834 small-pox prevailed among men in Moorshedabad. Variolation was again attempted on cows and calves, but unsuccessfully.

1834.

Dr. Macpherson writes on the 4th of January 1835 that no case of *matah*
1835. had come to his notice since 1833. The unfortunate Sylhet experiments had by this time been published and discussed, and evidence collected elsewhere by the Medical Board placed the severity of the newly discovered disease of cattle in such a strong light that the mind of the profession refused to accept it as an approved substitute and representative of vaccinia, and the whole matter appears to have dropped.

There now ensues a blank of 21 years in the history of cattle disease
1856. in this Division, but there is a distinct statement in a
1860-64. letter written by Mr. R. T. Scott, the Commissioner
1864. of Rajshahye, in February 1864, that "small-pox" was epidemic among the cattle of the Rajshahye District 8 years before then. Mr. Cockburn, the Manager of extensive estates in the same district, states that *bussunto* "prevails throughout Bengal," and has been on the increase during the past three or four years. In 1864 more careful inquiries were made regarding cattle diseases, and in this Division the results were the same as throughout the whole of Lower Bengal, namely, that cattle murrains were found to be frequent and fatal. "Murrain" in Maldah is said to have "visited the district periodically, commencing in the month of August and extending up to the end of April, fluctuating in its severity and carrying off a great many cattle." In Moorshedabad a great number of cattle are said to die annually from epizootic disease. Several villages in this district were visited by the Cattle Plague Commission in June 1870, and the universal testimony was that frequent outbreaks of the disease *matah* or *bussunto* prevailed. One man of 90 years, the *mundul* of a village, stated that he had seen the disease four times in his life, and that it prevailed there when he was a boy 10 years old. This removes the disease back to 1790. Other statements were much to the same effect, some saying that they had seen the disease 10 years ago, some 20 years ago, and so on. The same is said of the Rungpore District. In Dinagepore *gootee* is asserted to prevail frequently, and "often sweeps off herds of cattle." In Rajshahye *bussunto* occurs at intervals of 2 to 4 years. In fact, the same tale is everywhere told in nearly the same words, and its burden is summed up in the expressions "periodical prevalence" and "great mortality;" and it is curious to observe here what is equally evident in other places, namely, that men, such as agents of estates, zemindars, &c., who obtain a more intimate acquaintance with the rural life of India lay a greater emphasis upon this matter. The experience of the Commission has abundantly affirmed the truth of this observation, and shown that, unless in seasons of great and exceptionably severe mortality, the people endure their losses uncomplainingly, and that in order to get at the real state of the case, the smooth stolidity or unconcern which would ignore, conceal, or deny the existence of disease among their cattle must be disregarded, and a searching, house to house, and village to village, investigation
1865. made. The only record of disease in 1865 is from
1866. Rungpore, where the Commissioner, Mr. W. Le F.
1867. Robinson, writing in January 1867, states, on the authority of the Magistrate, that disease, evidently rinderpest from the symptoms assigned to it, raged at intervals during the two previous years. A belief prevailed that disease was brought into the district during the Bhootan war by the strange cattle passing through it, but the truth of this is doubted by the Commissioner, who remarks that the disease was known in the district before, and that not many cattle passed through the district, though a great many were taken out of it. In 1866 a similar disease prevailed in Bograh very severely, and not more than 5 per cent. of the cases recovered. It is curious to note, now that the symptoms of the prevailing murrains come to be more closely investigated and better understood, that there is a tendency to doubt the propriety of calling them small-pox. This feature is very well illustrated in Mr. Robinson's letter. He compares the cattle disease prevailing in Bograh to cholera, and while a very

HISTORICAL SKETCH.

correct and detailed description of the symptoms renders it manifest that the murrain was nought else than rinderpest, and precisely *what the Commission has found the natives call by their names for small-pox*, it is said, in Rungpore, that "all agree that it is different from other diseases prevalent among cattle, *such as small-pox.*" The great difficulty has always been the absence of pustules, which is pointedly noted in the case of the Bograh disease. As this matter, however, has been amply discussed, in treating specially of the nature and symptoms of cattle disease, it need not be further enlarged upon here.

1868. Two elaborate statements received from the districts of Rungpore and Dinagepore, showing the prevalence of cattle disease in each Police Division of these districts, evidence the wide prevalence of *bussunto* and other diseases during this year, 1868. It appears also from a letter written by H. C. Wake, Esq., C. B., Deputy Commissioner of Darjeeling, in June 1864, that the cattle of these districts are driven to graze in the Terai during the dry months of the year. This practice provides, as in the case of the Purneah District (see Bhaugulpore Division), for keeping up infectious disease. Cattle are driven to one tract of country from hundreds of different places, from one or more of which infectious disease may be conveyed. This spreads among the herds which are in free association with each other, and when the time comes for the cattle to return to their several villages, the disease returns along with them, and is thus carried to places where it had not previously existed. Under these circumstances it is probable that very few, if any, young cattle escape being attacked with the disease, and *they thus acquire a protection which accounts for only a certain proportion of stock being in any one season seized with the disease.*

1869. In 1869 disease continued to prevail extensively in Rungpore and Dinagepore; it also broke out in Bograh and Rajshahye in November, and in Moorshedabad in December.

1870. This latter outbreak has continued to prevail and spread throughout this district up to the end of December 1870.

The localities principally affected have been in the Sudder and Jungipore Sub-divisions.

In Rajshahye also reports of a severe outbreak of *bussunto* were received in June from the Nattore Sub-division.

In the district of Bograh the disease of 1869 continued to prevail during the months of January and February, and in the Dinagepore District reports received in April showed that the disease was still prevailing extensively, 678 head of cattle being noted as still ill when the investigation was made.

DISTRICT OF MOORSHEDABAD.

Summary of weekly returns received from the District of Moorshedabad, showing the prevalence and mortality of the disease Bussunto *from* 14*th June* 1870 *to* 5*th December* 1870.

Pergunnah.	Thannah.	Village.	Date of first return.	Date of last return.	Number attacked.	Number died.	Number recovered.
Gowas & Noanagan	Mirzapore ...	Samal ...	14th June 1870 ...	.....	100	50	50
Ekbarsahy ...	Ditto ...	Beluria ...	Ditto „ ...	1st August 1870 ...	51	27	24
Gankar ...	Ditto ...	Monigram ...	3rd July „ ...	24th October „ ...	89	47	42
Nowanagore ...	Ditto ...	Khalipoor ...	Ditto „ ...	12th July „ ...	34	27	7
Kasipni ...	Ditto ...	Bhurkunda ...	Ditto „ ...	14th August „ ...	57	41	16
Gonkar ...	Ditto ...	Jariar ...	6th Ditto „ ...	6th July „ ...	2	...	2
Shahazadpore ...	Ditto ...	Khurty ...	7th August „ ...	7th August „ ...	8	4	4
Ekbarshye ...	Ditto ...	Sheetalpara ...	Ditto „ ...	14th Ditto „ ...	9	4	5
Guncun ...	Ditto ...	Gangada ...	5th September „ ...	21st November „ ...	43	36	7
Nowavagur ...	Suti ...	Kyadanga ...	17th July „ ...	.....	4	4	...
Rajshahye ...	Ditto ...	Kadia ...	18th November „ ...	.....	18	18	...
Ditto ...	Ditto ...	Mohindiapur ...	17th July „ ...	.....	9	9	...
Sultanabad ...	Ditto ...	Bungoata ...	18th November „ ...	.....	25	25	...
Sultungial ...	Ditto ...	Dahina ...	22nd July „ ...	.....	10	7	3
Foteysing ...	Bhurutpore ...	Sheinparah ...	16th July „ ...	.....	1	1	...
Monohurshahye ...	Ditto ...	Shesooah ...	Ditto „ ...	.....	2	...	2
Foteysing ...	Ditto ...	Bhurutpore ...	Ditto „ ...	31st July „ ...	13	9	4
Foteysing ...	Ditto ...	Roygram ...	16th July „ ...	15th August „ ...	19	19	...
Ditto ...	Ditto ...	Mondolpore ...	24th Ditto „ ...	.....	1	1	...
Ditto ...	Ditto ...	Hamidhatty and Rilsundee.	31st Ditto „ ...	Ditto „ ...	7	4	
Ditto ...	Ditto ...	Binodeah ...	8th August „ ...	.....	2	2	...
Ditto ...	Ditto ...	Doorgapore ...	15th Ditto „ ...	31st Ditto „ ...	10	10	...
Ditto ...	Ditto ...	Alloogram ...	Ditto „ ...	11th September „ ...	6	4	2
Kantonagur ...	Ditto ...	Khoyrah ...	Ditto „ ...	.....	2	2	..
Foteysing ...	Ditto ...	Hamidbatty ...	22nd Ditto „ ...	.....	2	1	1
Ditto ...	Ditto ...	Andoolia ...	Ditto „ ...	.....	3	1	2
Ditto ...	Ditto ...	Govindpore ...	Ditto „ ...	31st August „ ...	69	61	8
Ditto ...	Ditto ...	Poorunderpore ...	Ditto „ ...	5th September „ ...	42	30	12
Gopinathpoor ...	Ditto ...	Ghoneshsampore...	Ditto „ ...	Ditto „ ...	34	34	...
Foteysing ...	Ditto ...	Chandalpore ...	Ditto „ ...	.....	4	4	...
Ditto ...	Ditto ...	Hamidhatty Pilekundy.	31st Ditto „ ...	10th October „ ...	11	10	1
Ditto ...	Ditto ...	Kadkhally ...	Ditto „ ...	.....	2	2	...
Ditto ...	Ditto ...	Sashparah ...	5th September „ ...	.....	1	1	...
Monohurshahye ...	Ditto ...	Kamulpore ...	18th Ditto „ ...	.....	2	2	...
Govindpore ...	Khargram ...	Kandooree ...	16th July „ ...	8th August „ ...	138	91	47
Khorgram ...	Ditto ...	Ditto ...	Ditto „ ...	5th September „ ...	25	8	17
Foteysing ...	Ditto ...	Roypore ...	24th Ditto „ ...	31st July „ ...	11	9	2
Govindpore ...	Ditto ...	Parbuttypore ...	8th August „ ...	22nd August „ ...	5	3	2
Khorgram ...	Ditto ...	Colgram ...	Ditto „ ...	.....	8	8	..

MOORSHEDABAD. *Summary of weekly return received from the District of Moorshedabad, showing the prevalence and mortality of the disease* Bussonto *from* 14*th June* 1870 *to* 5*th December* 1870.—contd.

Pergunnah.	Thannah.	Village.	Date of first return.	Date of last return.	Number attacked.	Number died.	Number recovered.
Mahanundy ...	Gokurna ...	Gokurna ...	8th August 1870 ...	5th September 1870 ...	56	49	7
Ditto ...	Ditto ...	Ginpara ...	Ditto „ ...	.....	58	33	25
Ditto ...	Ditto ...	Notoongram ...	Ditto „ ...	.....	31	16	15
Ditto ...	Ditto ...	Chatra ...	Ditto „ ...	.....	6	6	...
Ditto ...	Ditto ...	Jamna ...	Ditto „ ...	22nd August „ ...	27	13	14
Ditto ...	Ditto ...	Hazarpoora ...	Ditto „ ...	31st Ditto „ ...	43	27	16
Ditto ...	Ditto ...	Shamtaparah ...	Ditto „ ...	15th Ditto „ ...	24	12	12
Ditto ...	Ditto ...	Goutta ...	15th Ditto „ ...	22nd Ditto „ ...	60	35	25
Ditto ...	Ditto ...	Wooddy Chandpore	Ditto „ ...	17th October „ ...	2	2	...
Ditto ...	Ditto ...	Nobogram ...	22nd Ditto „ ...	5th December „ ...	17	15	2
Ditto ...	Ditto ...	Palandah ...	Ditto „ ...	.....	1	1	...
Foteysing ...	Ditto ...	Kallisunkerpore ...	Ditto „ ...	.....	14	14	...
Mohalundy ...	Ditto ...	Jinparah ...	Ditto „ ...	.....	4	4	...
Ditto ...	Ditto ...	Jogonathpore ...	23rd Ditto „ ...	.....	18	18	...
Ditto ...	Ditto ...	Mohalundy ...	31st Ditto „ ...	10th October „ ...	35	20	15
Foteysing ...	Ditto ...	Barra Shatooe ...	Ditto „ ...	23rd Ditto „ ...	24	10	14
Khargram ...	Ditto ...	Bhogobanhati ...	Ditto „ ...	10th Ditto „ ...	21	11	10
Foteysing ...	Ditto ...	Chomregueha ...	Ditto „ ...	.....	155	135	20
Ditto ...	Ditto ...	Kathalea ...	Ditto „ ...	5th September „ ...	30	2	28
Ditto ...	Ditto ...	Knala ...	Ditto „ ...	Ditto „ ...	12	2	10
Ditto ...	Ditto ...	Sreeluttee ...	Ditto „ ...	Ditto „ ...	21	4	17
Ditto ...	Ditto ...	Arwah ...	Ditto „ ...	Ditto „ ...	24	8	16
Ditto ...	Ditto ...	Seensear ...	Ditto „ ...	.....	15	10	5
Ditto ...	Ditto ...	Shoongee ...	Ditto „ ...	5th September „ ...	26	7	19
Ditto ...	Ditto ...	Chundparah ...	5th December „ ...	.....	2	2	...
Mohlundy ...	Ditto ...	Shaneparah ...	11th September „ ...	5th December „ ...	18	17	1
Ditto ...	Ditto ...	Ramessurpur ...	Ditto „ ...	.....	8	5	3
Ditto ...	Ditto ...	Dangaparah ...	Ditto „ ...	.....	1	4	...
Foteysing ...	Ditto ...	Boonbie ...	17th Ditto „ ...	.....	3	3	...
Ditto ...	Ditto ...	Koomarsund ...	14th November „ ...	.....	1	1	...
Ditto ...	Ditto ...	Baloon ...	23rd October „ ...	.....	6	4	2
Ditto ...	Ditto ...	Sokepoor ...	14th November „ ...	.....	1	1	...
Gopinathpoor ...	Ditto ...	Mohegram ...	7th Ditto „ ...	.....	1	1	...
Baharan ...	Bhudrihaut ...	Jaqpoor ...	9th July „ ...	10th September „ ...	80	67	13
Ditto ...	Ditto ...	Dohaul ...	Ditto „ ...	5th Ditto „ ...	184	132	52
Ditto ...	Ditto ...	Emannagur ...	Ditto „ ...	.....	4	4	...
Gowas ...	Ditto ...	Chaumgram ...	30th Ditto „ ...	.....	6	6	...
Ditto ...	Ditto ...	Dengaparah ...	Ditto „ ...	17th August „ ...	16	4	12
Bohurul ...	Ditto ...	Burungeo ...	13th August „ ...	27th Ditto „ ...	8	8	...
Muspur ...	Ditto ...	Rushoorul ...	Ditto „ ...	.....	1	1	...
Gowas ...	Ditto ...	Boora ...	Ditto „ ...	17th September „ ...	85	34	51
Ditto ...	Ditto ...	Megha ...	17th Ditto „ ...	10th Ditto „ ...	20	17	3

Summary of weekly returns received from the District of Moorshedabad, showing the prevalence and mortality of the disease Bussunto *from 14th June 1870 to 5th December 1870,*—contd.

Pergunnah.	Thannah.	Village.	Date of first return.	Date of last return.	Number attacked.	Number died.	Number recovered.
Bohurul ...	Bhudrihaut ...	Talhon ...	21st August 1870 ...	5th September 1870...	8	8	...
Gunkur ...	Ditto ...	Bungsea ...	5th September „ ...	10th Ditto „...	13	9	4
Ditto ...	Ditto ...	Noyaparah ...	10th Ditto „ ...	.....	9	2	7
Gysabad ...	Ditto ...	Ulnakar ...	3rd December „ ...	.....	10	10	...
Mohalundy ...	Kulleangunge ...	Singar ...	6th July „ ...	.....	6	2	4
Asudnugur ...	Ditto ...	Esanpore ...	5th September „ ...	10th September „ ...	102	26	76
Goysabad ...	Dewansarye ...	Paickparah ...	.....	.....	5	5	...
Echlampore ...	Ditto ...	Chowgachia ...	16th July „ ...	.....	1	1	...
Ditto ...	Ditto ...	Sreemuntopore ...	3rd December „ ...	.....	14	14	...
Chonakhally ...	Ditto ...	Salka ...	21st August „ ...	.....	1	1	...
Ditto ...	Ditto ...	Jagurpora ...	Ditto „ ...	.....	1	1	...
Gysabad ...	Ditto ...	Rajarsunpoor ...	17th September „ ...	.....	1	1	...
Gowas ...	Gowas ...	Degherpaber ...	30th July „ ...	.....	1	...	1
Murarípore ...	Assunpore ...	Rajagunge ...	15th October „ ...	21st October 1870...	2	...	2
				TOTAL ...	2,205	1,441	764

[*Remarks as to symptoms, treatment, &c.*—The symptoms assigned are those usually given. In the villages Kyadanga and Mohindrapoor the disease was called *Dakraj;* symptoms as follows:—loss of appetite, languor and dozing, swelling of the throat, tears, foaming at the mouth, coughing. Death generally ensues within 24 hours of the attack.

The mortality among attacked is 65·3 per cent., and the percentage of recoveries 34·7.

Beercoonda, two miles distant from Bockhara Railway Station, 19th June 1870, *Sunday.*

Visit to Beercoonda.

AHURUDDY MUNDLE, SHECK TALIB, SHECK NUFFUR, BESSONAUTH ROY, ATROO SHECK, of Beercoonda, say,—that this a Mahomedan village, inhabited by 60 or 70 families, a few of whom are Hindoos. They owned before the recent outbreak of *bussunto* 200 or 250 head of cattle, the bullocks forming the majority. The disease appeared at first at a village called Sarol, two miles to the east of this village, in the month of Falgoon last (February); on the 10th or 12th Bysack (May) last the disease broke out in this place in the house of one Shedoo Sheck. The symptoms of the disease are,—running from nose and mouth; the animal looks stupid; the skin becomes hot; it refuses food, and its ears droop; after 3 days purging sets in, and it passes blood and watery stools, and dies in 5 or 6 days. The following are the losses:—Shedoo lost 2, Shohah 1, Warick 3, Dilwar 1, Onanth 1, Teloo 1, Sheenoo 3, Gasloo 1, Mosham 1, Horoo 1, Careem 1, total 16, and from old age one bullock belonging to Gozloo Sheck. Our cattle graze during the day in the neighbouring fields, where the cattle of other villages also feed; they are housed during night and fed with straw and oil-cake; we throw the carcasses into the fields as usual, and the chamars take the skins and make shoes, &c.; they also eat the flesh of dead cattle. [One of the informants, the *mundle* of the village, 90 years old, says that he has seen this disease four times in his life, and the first attack seen by him was when he was 10 years old]. We have never seen or heard of any cases of cattle poisoning. The value of cattle has risen 50 per cent.; for instance, a cow or bullock that cost Rs. 10 ten years ago now sells for Rs. 15. The *Pikars* (dealers) from other districts and from distant villages come to our place four or five times every month, and having 10 to 25 head of cattle for sale, we buy cattle of them. One attack of *bussunto* gives immunity to the second attack. *Khoorah* attacks animals often; this is not fatal.

Village stock.

Date of outbreak.

Losses.

Grazing.

Housing.

Disposal of carcasses.

History.

Cattle poisoning.

Price of cattle.

Supply of stock.

Second attack.

Case No. 1.—Saw at Beercoonda a bullock, 6 months old; condition fair; ill 14 days; dry muzzle; discharge from eyes and nose; ears drooping; off feed; eruptions (miliary) all over the body; eyes œdematous; very weak; lies down; off drink; excoriations of gums and floor of mouth; cough; difficulty in swallowing, and shows pain after it; purged blood and mucus for 11 days; the bowels have improved a little; breath offensive. The owner says that he has lost 3 cattle, and this is the 4th attacked; has sustained a loss of Rs. 33; is obliged to borrow money; he will buy from the *Pikars.*

MOORSHEDABAD.

Case No. 2.—A calf, 5 months old; condition poor; profuse discharge from eyes, nose, and mouth; the gums and buccal membrane are much congested, and there are slight excoriations; offensive breath; ill two days; off feed; refuses to suck; very weak; has great difficulty in walking; coat staring.

Case No. 3.—Another case was seen recovering, but the excoriations of the gums, which have been very severe, are healing.

Case No. 4.—Another cow recovering; eruptions of udder and thigh healing.

Belooria, four miles off Railway Station of Bockhara.

Visit to Belooria.
Case.

Saw a bullock, 7 years old; 3 days ill; condition fair; discharge from eyes, nose, and mouth; muzzle dry; excoriations on buccal membrane, gums, and floor of mouth; drooping ears; very weak; off feed and drink; has not yet commenced purging; coat staring, but no eruption; lying down.

Evidence of villagers.
Village stock.
Losses.
Sheep.

BANY CHOWDHRY, BUNWARYLAL CHOWDHRY, RAMESSUR ROY, SHORBO CHUNDER MOOKERJEE, and TINCOWRIE BUNDOPADHYA, of Belooria, say,—that this village is inhabited by upwards of 100 families, all Hindoos. There were in our place nearly 300 head of cattle, but out of this number we have lost 60 cows and bullocks of *bussunto*, which broke out in the month of March, and it continues still. [This very day the chowkeedar reported that none were sick.] We have lost 5 or 6 sheep from that disease. The following gives the details of losses:—

Names.	Had.	Has.	Lost.
Bany Madhub Chowdhry	31	5	26
Bunwary Chowdhry	25	18	7
Rajkisto Mookerjee	10	8	2
	(lost two sheep also.)		
Ramtonoo Shahoo	12	12	0
Dwarick Roy	5	2	3
Koonjo Kur	4	2	2
Khedav Mundle	5	4	1
Gooroo Dass	10	6	4
Luckhee Bania	1	1	0
Rutton	2	1	1
Ramessur Roy	7	4	3
	3	0	3
Ramessur Maul	1	0	1
	6	3	3
TOTAL ...	112	66	56

Infectiousness.
Segregation.
Source of rinderpest.
Rinderpest in 1862 or 1863.
History.
Season.
Mortality.
Effect on cultivation.
Foot and mouth disease.
Recent losses from rinderpest.
Loss in money.
Hides.
Cattle poisoning.
Instance.

We consider the disease to be infectious; we did not separate the sick from the healthy. We have no means of doing this. The disease appeared at first at Paolee, and at the latter end of Falgoon (February). Redhoy Maul purchased one bullock from that village, and brought it to our village. The disease soon after broke out at Belooria. Paolee is 2 miles distant, east of this village. There was also disease at Foolshore and Gangerdah, half a mile distant; 7 or 8 years before this there was an outbreak of *bussunto* in this place. During the life of Bany Madhub Chowdhry, he has seen 3 or 4 outbreaks. The disease generally breaks out in February and March. The mortality this time is greater than the mortality on the last occasion. We never knew of land being left fallow owing to many cattle dying of *bussunto*. We had *khoorah* last year, but none died from it; one or two cattle are known to have died of *khoorah*, but, as a general rule, it seldom proves fatal. One cow belonging to Bany Chowdhry died of *bussunto* yesterday; Luckhee Bania lost her cow the day before yesterday; 2 days ago, on the 17th, Gooroo Churn Dass lost 1 cow; on the 16th Ramdyal. Roy lost his cattle; on the 15th Gooroo Churn Dass lost another animal. We calculate our loss to be at least Rs. 800 by the death of the cattle during the present outbreak. The chamars take the skin of the carcasses thrown into the *baghar*, and they eat the flesh. The chamars sell the hides to the *Pikars*, who come from Berhampore and Calcutta They also make shoes. The chamars do poison cattle occasionally, but we do not consider this murrain to be the result of poisoning. Two years ago we seized a chamar in the act of poisoning cattle. They had given *sombolkhar* poison (arsenic). We punished them and then let them off, and since then cattle did not die so suddenly as they used to do before the seizure.

Explanation of chowkeedars.

The chowkeedar Ram Chunder said that he was not aware of the death of the cow yesterday belonging to Bany Lal Chowdhry. He did not know that Luckhee's cow died the day before yesterday; can't also say whose cattle died 2 days ago.

The other chowkeedar, Gopal Sing, says that he is a new man and does not know the names of the ryots; does not know of any cow dying yesterday; has heard that Luckhee lost an animal, but can't say from what disease; can't say who lost cattle on the 16th.

Visit to Belkhona, 20th June 1870.

Rinderpest in 1868.

No sickness now; had *bussunto* 2 years ago; 9 attacked and 3 died.

MOORSHEDABAD.

Visit to Telongol.

Had *bussunto* 3 years ago; 15 attacked and 14 died; no disease now. — Rinderpest in 1867

Visit to Basbelooria, 20th June 1870, 7-30 A. M.

RAMLAL MUNDLE, RUGHO NAUTH DASS, UNONTO LAL MUNDLE, MADHUB MAUL say,—that we had *bussunto* among our cattle in the months of March, April, and May last, and we lost from that disease 50 to 60 head of cattle, the value of which we estimate at Rs. 1,000. There is no disease now. There were nearly 250 head of cattle in our place before the outbreak of murrain. The symptoms of the disease are;—off feed; purging blood and mucus; eruptions on the body, which generally appeared on the 3rd or 4th day; discharge from eyes, nose, and mouth; ears drooping; excoriations in the mouth, and offensive breath. The cattle died from the 3rd to the 15th day. There was neither then nor before then any such disease in any other villages. The disease is contagious, but we did not separate the sick from the healthy. Nearly 12 years ago there was another outbreak of *bussunto* among cattle, and the mortality was as severe then as now. On the former occasion the Dohalee village had the attack first, and it came afterwards to our place. The cattle of our village and of the neighbouring villages graze together on a common pasture. We do not purchase cattle in any fairs or markets, but make our purchases in the surrounding villages by private bargain. We buy our cattle generally in the months of January, February, March, April, and May, these being the months when we prepare for tilling our lands, and till them. In Bysack last (April) some of the villagers purchased 5 head of cattle from several other villages. There was no disease in those villages as far as is known to us. The newly purchased animals did not suffer. The carcasses are thrown away and the skins are taken by the chamars. Eighteen years ago one Goluck Kotol of our village could not till his land for want of cattle which had died of murrain. We shall somehow or other get on this year, but several of us will have to borrow money. There was disease also at Emamnuggur and Dohalee, but none at Jugpore.

Evidence of villagers. Rinderpest in March to May. Losses. Village stock. Symptoms. Contagiousness. Segregation. Rinderpest in 1858. Source of disease. Supply of cattle. Purchases. Disposal of carcasses and hides. Effect on cultivation.

Two cases were seen recovering; a 4-tooth cow; excoriation of mouth all but healed; dung is getting into good order; eruptions desquamating; animal still weak. Another very much in the same state, but eruptions not present; both have still a thick discharge from the nose.

Cases.

Visit to Dohalee.

Saw a cow, aged 6 years; condition poor; ill 9 or 10 days; discharge from eyes and nose; purging dysenteric stools; has commenced to feed a little; did not eat at all for 5 days; salivated for several days; there is still a slight discharge from mouth; a large excoriation and aphtha in the vagina; excoriations on the gums are healing.

Visit to Dohalee. Case.

A bull calf, 2 years old; ill 7 days; condition fair; very viscid discharge from eyes, nose, and mouth; excoriation and aphtha on the buccal membrane; eruptions on shoulders, and weak; purging blood and mucus; off feed for 5 days; has commenced to pick up a little.

Case.

A bullock, 13 years old; condition poor; ill 7 days; purging dysenteric stools; off feed; discharge from eyes, nose, and mouth; excoriations on hard palate; ears drooping; eruptions on shoulders, neck, and ribs; animal recovering.

Case.

A bull calf, 2 years old; condition fair; ill since day before yesterday; off feed; excoriation and aphtha on lower gums; no eruptions; purging; ears drooping; slight discharge from eyes, nose, and mouth.

Case.

A bull, 7 years old; condition good; ill 5 days; excoriations on buccal membrane, gums, and palate; very viscid discharge from eyes and nose; ears drooping; off feed; refusing to drink; purging watery and offensive stools since yesterday.

Case.

RAMESSUR CHUCKERBUTTY, CHUNDER NARAIN CHUCKERBUTTY, MODOOSOODUN CHUCKERBUTTY, PURMESSUR SINGH say,—that this is a Hindoo village and contained before the murrain 500 head of cattle, of which we lost 50 within the last 15 or 20 days; the disease is called *bussunto*, and appeared in our village in the middle of May last. Twenty years ago there was a similar outbreak here; no one aware of any other previous attacks. The mortality then was not so severe as now; there is still disease in our village, and nearly 20 head of cattle are suffering. The symptoms now seen by the Commission were seen by us in the cases that ended fatally. The ordinary bulls of the village serve the cows; we do not get any bulls from any other provinces. The *Pikars* bring cattle 3 or 4 times a year; there is no cattle market near our place. The loss estimated by death is Rs. 500, at the rate of Rs. 10 for each head of cattle. Only 12 head of cattle died during the attack 20 years ago. It raged in the month of September.

Evidence of villagers. Village stock. Loss. Rinderpest in May 1870. Rinderpest in 1850. Bulls. Cattle trade. Loss in money.

The disease this time broke out in Belooria at first. Twenty years ago the adjoining village of Dingapara was attacked first. We consider the disease to be infectious; we cannot segregate, for we have no means for separating. We give no medicine, as we know of none. There is no cow doctor here. We give *doob* grass, but it is not eaten. The sick cattle refuse food for 4 or 5 days; when appetite returns we know that the animal is recovering.

Source of disease. Infectiousness. Segregation. Treatment. Feeding.

DISTRICT OF BOGRAH.

Statement showing the prevalence and mortality of Bussunto *in the District of Bograh, dated 21st January* 1870.

Thannah.	Village.	Date of outbreak.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Bograh ...	Sooltangungepara ...	15th December 1869 ...	125	10	7	1	2	The symptoms detailed are those usually given. The percentage of stock of number attacked is 23, and of deaths 12; deaths per cent. of attacked 52.
Panchbibee ...	Khoredopara ...	15th September ,, ...	84	28	18	9	1	
	Bagooree ...	,, ,, ...	405	82	48	28	6	
	Beernagore ...	,, ,, ...	343	15	7	1	7	
	Chuckburkut ...	,, ,, ...	29	40	28	8	4	
	Poorana Appoil ...	28th December ,, ...	300	1	...	...	1	The treatment noted is separation, cleansing of sheds, root of peepul plant, dry ginger, and leaves and bark of *Jatay*, salt, *maree* of stale rice and plantains.
Badulgachee ...	Roghoonathpore ...	20th August ,, ...	144	68	64	2	2	
	Daoil ...	,, ...	90	44	37	6	1	
	Sreepore ...	24th December ,, ...	215	18	7	7	4	
Dhoomut ...	Ghoogoorapara ...	Not ascertained ...	150	25	10	5	10	
	Awlah ...	,, ...	175	150	25	118	7	
		Total ...	2,060	481	251	185	45	

Statement showing the prevalence and mortality of Battan *or Foot and Mouth Disease.*

Sheriakandee ...	Phoolbaree ...	December 1869 ...	200	100	...	25	75	Attacked per cent. of stock ... 37
	Horina ...	,, ...	100	25	...	5	20	Died ,, ,, ... ·1
	Shomushpore ...	,, ...	100	50	...	25	25	Died ,, of attacked ... ·4
	Ramchunderpore ...	,, ...	100	50	3	20	27	Treatment consists of the application of tar and turpentine to the affected parts.
	Bytabhanga ...	,, ...	200	150	...	25	125	
	Sagoldhora ...	,, ...	426	208	1	200	7	
	Boroeekandee ...	,, ...	175	25	...	10	15	
	Kootulpore ...	,, ...	1,000	400	...	175	225	
	Benipore ...	,, ...	200	57	...	50	7	
	Dholerkandee ...	,, ...	225	25	...	10	15	
	Kurnibaree ...	,, ...	180	19	...	6	13	
	Deodenga ...	,, ...	225	105	...	100	5	
	Maseerpara ...	,, ...	525	250	...	50	200	
	Dhap ...	,, ...	225	100	2	28	70	
	Daroona ...	,, ...	294	200	1	25	174	
	Dewoollabaiee ...	,, ...	200	100	1	25	74	
	Charpacoorea ...	,, ...	660	75	...	47	28	
	Kooripara ...	,, ...	125	25	...	15	10	
	Baooetana ...	,, ...	113	38	...	18	20	
	Kajla ...	.....	97	32	...	10	22	
	Narchee ...	.....	800	300	...	270	30	
	Jatholida ...	.....	100	25	2	10	13	
		Total ...	6,270	2,359	10	1,149	1,200	

Statement showing the prevalence and mortality of Bussunto *and* Battan.

Gobindgunge ...	Chandipore ...	September 1869 ...	80	26	14	...	12	Attacked per cent. of stock ... 43
	Shohagipara ...	,, ...	50	10	8	...	2	Died ,, ,, ... 32
	Barna ...	,, ...	155	86	70	10	6	Died ,, of attacked ... 75
		Total ...	285	122	92	10	20	

From T. F. Bignold, *Esq., Offg. Magistrate of Bograh, to the President, Cattle Plague Commission,*—(*No.* 506, *dated 6th April* 1870.)

In reply to your letter No. 171 of the 28th February, I have the honor to state that the symptoms of the murrain in Sheriakandee are as follows:—

2. The animal at first coughs; after 4 or 5 days appears dull and neglects to feed; viscid saliva is discharged from the mouth, and blood from the nose; the mucous membranes of the nose and mouth are covered with sores; sores also break out on the body, and blood is discharged from the anus, and the animal generally dies within 8 or 9 days from the appearance of the cough. It is said that the mortality is greatest among those cattle which are allowed to drink copiously of water.

3. A ryot of Modhupore informs me that he had 5 cattle affected; the symptoms were cough, dulness, chilliness, loss of appetite, bristling of the hair, diarrhœa, sore mouth; no sores on the body, and no swelling of the feet. He knew of another case in which 9 were affected from the same disease, of which 8 died.

4. Another ryot gives a similar description; two cows were affected in his village and both died.

5. The Police of Modhupore reported 71 cattle ill at the beginning of March, and 21 new cases, 8 deaths, and 17 recoveries during the month.

6. The absence of sores on the body appears to distinguish the disease existing in Modhupore from that in Sheriakandee.

DISTRICT OF DINAGEPORE.

DINAGEPORE.

Information regarding diseases of cattle in the Dinagepore District, furnished by E. A. WESTMACOTT Esq., *Magistrate,—dated 20th April* 1870.

Locality. The villages affected were as follows:—111 in Bansibari Thannah, 10 in Chintaman, 6 in Porganja, 7 in Thakurgam, 7 in Ranisankol, 27 in Pabnitullah, 10 in Gungarampore, 30 in Ranigunga, 5 in Habra, 21 in Birgunga, 25 in Kotwali, 101 in Pateram, 88 in Nawabgunga 344 in Porsa: total 792 villages.

Names. The diseases are called *halhalia* (হলহলিয়া), *chapechapa* (চপচপা), *bussunto* (বশন্ত), *dhersi* (ধেড়শী), and *kanrai* (কানরাই).

These have prevailed for the last two years.

Statistics. The stock belonging to the villages is estimated at 2,52,219; 44,759 animals were attacked (17 per cent.), 22,362 died (9 per cent. of stock and 50 per cent. of attacked), 15,437 recovered (6 and 34 per cent.), and 678 are still ill. The diseases are infectious; cause not known; the symptoms described are those usually assigned to *bussunto*.

DISTRICT OF RUNGPORE.

RUNGPOOR.

Information regarding cattle disease in Rungpore furnished by F. G. MILLET, Esq., *Officiating Magistrate, and founded on reports prepared by the Police, dated 9th August* 1870.

The returns obtained by the Police refer in most cases to the months of January and February 1868 and 1869. The reason of this is that the inquiries made referred pointedly to these months, with a view to discover whether the disease was conveyed to Assam by the herds of buffaloes exported from this district in that season. In some cases the Police have given the mortality for the whole year. The statements are, in brief, as follows:—

1. *Nesbetgunge Police Station.*—Twenty-nine villages; diseases *bussunto* and *baidh* or cholera; symptoms those usually assigned; appeared in January and disappeared in April; mortality 600. "*Usual exportation goes on during the prevalence of the diseases, but only to near districts.*"

2. *Rungpore Station.*—Three villages; diseases *bussunto* and *baidh;* mortality 19 from former and 20 from latter. *Same remark regarding exportation.*

3. *Molong Outpost.*—Fifteen villages; disease *bussunto;* mortality 275. *Exportation to near districts only.*

4. *Peergunge Station.*—Fifteen villages; diseases *bussunto, baidh,* and *pain in stomach;* mortality in 1868, 99 of *bussunto,* 168 of *baidh,* and 12 of *pain in stomach;* in 1869, 218 of *bussunto,* 157 of *baidh,* and 5 of *pain in stomach. Exportation to adjacent districts only.*

5. *Sadoolapore Station.*—Diseases *bussunto, johorbow, data, suah, sengabow, bengabow, hapadhura,* and *horapjeerah;* symptoms not given; mortality 4 or 500.

6. *Cheelmarry Station.*—Seven villages; diseases *bussunto, golafoola, benga* or *pasterbednah;* mortality in 1868, 1,106; in 1869, 553, of *bussunto,* for the whole year.

7. *Baroonee Station.*—Twenty-six villages; diseases *bussunto* and *golafoola;* mortality 2,556. *No exportation.*

8. *Bugwah Outpost.*—Eight villages; diseases *bussunto* and *khoorye;* mortality 2,000. *No exportation.*

9 *Kowargunge Station.*—Six villages; disease *bussunto:* mortality in 1868, 90; in 1869, 131.

10. *Foorunbarry Station.*—Thirty-two villages; diseases *bussunto, golafoola,* and *khorameena;* mortality 135.

11. *Darwanee Station.*—The disease *bussunto* raged over the whole station; mortality in 1868, 1,055; in 1869, 1,306.

12. *Dimlah Station.*—The diseases *bussunto* and *khoorye* raged over the whole station; mortality 4,389.

13. *Bhowangeegunge Station.*—Three-fourths of the cattle died of *bussunto* in March and April.

14. *Bagdowar Station.*—Twelve villages; disease *bussunto;* mortality 934.

The total mortality in 1868 and 1869 amounts to 16,227. The only inference which can be drawn from these returns is that the diseases mentioned are very common and cause much loss of cattle yearly.

COOCH BEHAR DIVISION,

COMPRISING THE DISTRICTS OF DARJEELING, JULPIGOOREE, GOWALPARAH, AND THE STATE OF COOCH BEHAR.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Darjeeling.	Historical Sketch ...	...	.....	Page 253.
	Dr. J. McClelland, Inspector General, Medical Department.	...	*29th Feby.* 1864...	*Selections, Bengal Government, p. 38. Describe the outbreak of cattle disease in* 1861 *during the Sikhim Campaign.*
	Surgeon J. C. Collins ...	...		
	H. C. Wake, Esq., C. B., Deputy Commissioner of Darjeeling.	130	*4th June* 1864 ...	*Selections, Bengal Government, p.* 51. *Reports on cattle disease in* 1861.
	H. M. Herrold, Esq. ...	...	*15th August* 1866 ...	*Selections, Bengal Government, p.* 129. *Describes cattle disease at Darjeeling in* 1865-66.
	Colonel J. C. Haughton, C. S. I., Commissioner of Cooch Behar.	120	*25th Jany.* 1870 ...	Information regarding cattle disease in Bhootan and Darjeeling, p. 255.
	Major B. W. Morton, Deputy Commissioner of Darjeeling.	8 C	19th do. ...	
	G. Rosamond, Esq., Inspector of Police at Darjeeling.	...	*5th October* 1870 ...	*Reports appearance of cattle disease.*
	Major H. P. Wynch, District Superintendent of Police, Darjeeling.	*A*	*Do. do.* ...	*Forwards the proceeding; thinks that the disease is a kind of foot rot.*
	Ditto ditto	...	*Do. do.* ...	*Reports sickness and deaths among cattle.*
	Ditto ditto	346	7th do. ...	Reports sickness and deaths among cattle, p. 255.
	Ditto ditto	347	*8th do.* ...	*Reports on the outbreak at Kurseong.*
	Major B. W. Morton, Deputy Commissioner of Darjeeling.	...	Do. do. ...	Reports on the outbreak at Kurseong, p. 256.
	Major H. P. Wynch, District Superintendent of Police, Darjeeling.	349	*10th do.* ...	*Further report of the same outbreak.*
	Ditto ditto	...	Do. do. ...	Report in Form No. 1, p. 256.

Index of Records.

Districts	From whom received.	Number.	Date.	Reference and Purport.
Darjeeling—*continued.*	Evidence recorded at Kurseong and on the road to Darjeeling.	...	19th and 20th October 1870 ...	Evidence recorded by the Cattle Plague Commission at Kurseong and Darjeeling. ... ... P. 257.
	Evidence of Tenchung recorded at Darjeeling.	...	22nd October 1870	... ... P. 258.
	Evidence of Nerboo, Interpreter, Deputy Commissioner's Court.	taken	23rd do. ...	... . P. 259.
	Evidence of Geelong of Sikhim.	taken	Do. do. ...	... ... P. 260.
	Evidence of Jungpen of Thibet.	...	Do. do. ...	... . P. 260.
	Evidence of Mr. John White, Hotel-keeper, Sonada.	...	24th do. ...	... ... P. 260.
Goalparah.	Statement furnished by Baboo Goonabhi Ram Burooah.	...	7th April 1870 ...	Report in Form No. 1 ... P. 261.
Cooch Behar.	*Lieutenant Colonel W. Agnew, Officiating Commissioner, Cooch Behar.*	1238	*29th August* 1866 ...	*Selections, Bengal Government, p.* 115. *Describes severe prevalence of murrain in Eastern Dooars in* 1865.

HISTORICAL SKETCH.

HISTORICAL SKETCH.

In this, as in other Divisions, no precise date can be assigned to the first appearance of murrain among cattle, and the officials and inhabitants concur in asserting that plagues of various kinds have been of frequent occurrence, and that these occurrences extend beyond the recollection of the present generation.

On this subject, Baboo Goonabhi Ram Burooah, Extra Assistant Commissioner of Gowalparah, writes,—"The oldest of men living cannot give any satisfactory account on this subject (history). The increase of communication between one place and another has brought and spread the plague." "Plagues occurred in Gowalparah in 1851, 1852, 1868, and 1869. Between these years also the plagues raged in the district, but in them it was very severe." Mr. Wake, C. B., Deputy Commissioner of Darjeeling, mentions that in 1860 there was a great deal of loss of cattle from disease in the hills, and that it appears to have been imported from below (the Terai). Surgeon J. C. Collins, writing in 1861, states that during the time that preparations were being made for the Sikhim Campaign in 1861, a very fatal disease broke out among the Commissariat cattle employed in bringing up stores from the plains. This outbreak was described by several witnesses (Sikhim men) examined by the Cattle Plague Commission, who also deposed that the disease affected the cattle of several Sikhim villages at the time. They further informed the Commission that rinderpest, known there as *yor*, was well known in Sikhim, and appeared periodically from time beyond recollection in their country. A man from Thibet—Jungpen, a cattle doctor—was examined on the same occasion, and testified to the prevalence of the same disease known as *chunneah* in Thibet, and his account of the spread of the disease east and west from Sarka, the salt producing district, will be found at page 260. Foot and mouth disease (*khuchha*) was known in both countries, also in Bhootan. Both these diseases affected wild as well as tame ruminants.

1851-52.

1860.

1861.

Rinderpest is stated by Mr. Wake to have been prevalent in the Terai in 1863. He also mentions that numbers of cattle of all kinds died of the same disease. Most of these came during the cold weather to graze, returning to Rungpore, Purneah, and Dinagepore at the commencement of the rains. The next record of cattle plague is contained in the evidence of Mr. John White of Sonada, who states that in 1864 at Maldram, about four miles on the Sonada side of Kurseong, a Lepcha named Ramprost owned 150 head of cattle, and lost them all from a kind of dysentery. They passed blood, and the interior of the rectum was seen to be of a dark, bloody, liver colour: "these cattle had no sore feet." Mr. Herrold, Manager of the Bullock Transit Train, finding that plain cattle did not stand hill work, sent men early in November 1865 to collect cattle of the hill breed from the Morung. A few days after their arrival, towards the end of December, two became ill, one at Darjeeling and the other at Kurseong, on the same day: these died within 36 hours. The remainder, which had been with the diseased cattle for a whole night in the same shed, were removed, but they "dropped off day after day (of the same disease), until on the 15th of December I had not one left of the herd of upwards of 40 head." The symptoms described by Mr. Herrold are such as to leave no doubt that the disease was rinderpest.

1863.

1864.

1865.

Lieutenant Colonel Agnew, writing in August 1866, states that cattle disease somewhat similar to the Calcutta epizootic is not uncommon in the Dooars and Cooch Behar, and that in the Eastern Dooars it proved very fatal last year (1865). The Deputy Commissioner of the Dooars reported that the carcasses of diseased cattle were to be seen in every village, and no precautions were taken to remove dead bodies.

HISTORICAL SKETCH.

Mr. Herrold's cattle again suffered in 1866. He says,—"In March I purchased 70 head of cattle from Nepal, and a week afterwards the foot and mouth disease, called by the natives *khuratie*, broke out among them. In April the first disease mentioned (rinderpest) broke out again among some new cattle the Commissariat had purchased from Bhooteas, and in a very short time nearly all died. Some of these cattle, in a diseased state, were continually moving about the cart-road spreading infection, by which I lost very nearly 150 head of draught cattle, several head of milch cows and calves, and a great many natives in the vicinity of the cart-road lost their buffaloes and cows. I believe this disease is very common in Nepal; natives call the disease *dosalin*—plague." The Darjeeling Municipality now took over charge of the train lately under Mr. Herrold's management, and at the depôt at Sonada a great many cattle died,—in fact, so many, that the train was closed for a time. Mr. J. White, who had charge of this depôt, states that all the cattle purged and passed blood. Mr. White further states that the disease has occurred yearly in the hills since that period. Rinderpest also prevailed in Hopetown (Mr. John Stalkartt's tea garden) in 1866.

1866.

1868-69. Baboo Goonabhi Ram Burooah states that rinderpest was very severe in Gowalparah in 1868 and 1869.

1870. Early in September 1870, foot and mouth disease broke out at Sooknee on the new cart-road between Silligoree and Kurseong. It had previously been heard of at Titalyah and Silligoree on the Darjeeling road, and it spread stage by stage up the hill until it reached Darjeeling. Kurseong and Darjeeling were visited by the Cattle Plague Commission in October. The disease was found to be foot and mouth disease; the mortality was found to be very great on account of the contractors having to work their cattle after they became affected, in order to fulfil their contracts. It was ascertained that the mortality of cattle belonging to contractors was between 40 and 50 per cent., while the deaths among the cattle of owners who had no contract was only about 12 per cent.

The statistics furnished by the Police are as follows:—

LOCALITY.	Attacked.	Died.
Darjeeling	137	28
Kurseong	333	140
Mateagurh	323	.
Sonada	15	17
Phansigurh	13	2
TOTAL ...	881	187

The mortality is about 21 per cent., rather less than a mean between the rates ascertained by the Commission to prevail amongst the cattle of contractors and private owners.

DISTRICT OF DARJEELING.

DARJEELING.

From Major B. W. MORTON, *Deputy Commissioner of Darjeeling, to the Commissioner of the Cooch Behar Division, Julpigooree,*—(*No.* 8*C, dated Darjeeling, the* 19*th January* 1870). Major B. W. Morton

I have the honor to acknowledge receipt of your letter No. 2879, dated the 20th ultimo, and your endorsement No. 21, dated the 4th instant, forwarding questions with regard to cattle disease.

2. As I have already reported, there is no such disease in this district at present, and I presume that no replies to the questions of the Commission are called for from me. I have, however, had one of the most intelligent of the natives of this district, Tendook, agent of Cheeboo's heir, examined, and I forward his replies to the questions so far as the land leased to his principal is concerned.

3. I may add that I have examined cattle owners in the district, and that their statements tally with those of Tendook. They assured me that the visitation of 1865 was very severe, that scarcely any animal which was attacked with the disease survived, and that they looked to prevention (by segregation) rather than to any cure of the disease. Outbreak of 1865.

4. It may be interesting to note that the natives of these hills believe that, whilst cows, sheep, and goats are all liable to the disease, pigs, of which there are great numbers in this district, are never attacked. Pigs.

Information furnished by TENDOOK BHOOTEA.

The locality is known as Cheeboo's illaqua, lying between the Chota Rungeet River and Nepal Frontier.

The name of disease is *Flookho* (in *Lepcha*). It broke out in November 1865. One hundred cattle were attacked, and they all died. The number of cattle belonging to the village was five hundred. The disease is supposed to be infectious. It came from the plains, first appeared in Darjeeling, and then spread to my illaqua. Statistics.

The symptoms are as follows:— Symptoms.

The hair or wool, as the case may be, stands on end.

There is a disease in which eruptions at the cleft of the hoof and under the hoof occur; this is not very destructive, it may be cured; but the worst type of disease shows no eruptions: this was the kind that appeared in 1865.

The eyes and mouth water, and there is frothing of the mouth too; the body is cold; there is little or no cough, but the breathing is labored; there are shivering fits, but not till the cattle are about to expire; they go off in a shivering fit; both throat and tongue swell and there is difficulty of breathing; the urine is red, as if slightly mixed with blood: fæcal evacuations watery.

The fat cattle die in about 4 hours from the commencement of the attack; the lean ones hold out a whole day; but all invariably succumb to the disease.

No medicines are known, and nothing had recourse to except the *munter*, or incantations of the Lamas; they go through all this over a vessel of water, and the water—simply ordinary water—is given to the infected cattle, but they never recover. Treatment.

From Major H. P. WYNCH, *District Superintendent of Police, Darjeeling, to the Deputy Commissioner of Darjeeling,*—(*No.* 346, *dated Darjeeling,* 7*th October* 1870).

I have the honor to state that from a report received from Kurseong it appears that the cattle disease appeared in this district about the middle of September.

Buggutheer Sirdar of Sepaijora has 42 bullocks sick, and 2 have died.
Persad Sing of Chuttuckpore has 25 bullocks sick, and 9 have died.
Sadagur of Chuttuckpore has 25 bullocks sick, and ten have died.
Bulbeer of Sepaijora has 4 bullocks sick.
Patlee Tapur of Sepaijora has 2 bullocks sick.
Ajub Lall of Sepaijora has had disease amongst his cattle commencing from the 1st October; 11 are sick.
Poorun Lall has also had disease amongst his cattle commencing from the 1st October; 5 are sick.
Bullee Tapur has had disease amongst his cattle from the 1st October; 1 sick.
Teybur has had disease amongst his cattle from the 1st October (Sepaijora); 2 sick.
Attar Jee has had disease amongst his cattle from the 1st October (Sepaijora); 1 sick.
Mila Persum of Chuttuckpore from the middle of September; 5 sick.
Kanjee Bhootea from the middle of September; 14 sick.
Kurboree Lepcha of Gyaburee, since the middle of September; 50 bullocks sick, 6 died.
Ali Mohamed of Ghabaree, since the middle of September; 31 bullocks sick, 29 died.
Chutterma of Sookna Terai, since the middle of September; 16 sick, 23 died.
Mohamed Khansamah of Sookna, since the middle of September; 16 sick, 4 died.

DARJEELING.

Name of disease.

Uzeer Ali of Kurseong, since the middle of September; 19 sick, 7 died.
The disease is called *chupchoopia*, and affects the mouth and feet.
Jugbeer Tapa of Chuttuckpore since the middle of September; 7 bullocks sick, 1 died.
Luchman Pahamis, since the 1st of October (Chuttuckpore); 2 bullocks sick.
Bhuggun of Chuttuckpore, since the 1st of October; 12 sick.
Juman Sing of Chonabuttea, since the middle of September 1870; 34 bullocks sick below Kurseong, 25 died.

I have told Inspector Thomas, V. C., who has been ill lately, to call on Sub-Inspector Luchmee Kant of Kurseong Police Station for an explanation as to why I did not at once receive a report of this sickness, and to tell me the exact date it broke out. The Head Constable of Kurseong Police Station writes that up to date, 5th October, in the Kurseong District, 517 bullocks were sick, and 116 had died.

Full report from the Terai will follow from Inspector Golam Kadir.

From Major B. W. MORTON, *Deputy Commissioner of Darjeeling, to the President, Cattle Plague Commission,—(dated Darjeeling, the 8th October* 1870).

I have the honor to acknowledge receipt of your letter No. 495, dated the 5th instant, on the subject of the outbreak of cattle disease in this district, and to reply as follows:—

2. The cattle disease at present prevalent in this district appears to be of an epizootic nature; some cattle appear to have contracted the disease in the plains, and to have communicated it to other cattle in the hills.

The disease seems to have first appeared in the district in the latter end of September, and since to have rapidly spread.

The symptoms, the District Superintendent reports, are those of foot rot and throat disease.

3. I am not in a position to answer all the inquiries made in the printed paper which accompanied your letter under reply.

I am sending your letter to the District Superintendent of Police, and full information will doubtless be procured by the time the Commission arrives in the district; meanwhile I have the honor to forward all the communications I have received up to date from the Police, and to state that whilst the disease appears to be for the present confined to the cart-road, I much fear that it will be communicated to cattle throughout the district.

Information supplied by Major H. P. WYNCH, *District Superintendent of Police, Darjeeling, in Form No.* 1,—(*dated* 10*th October* 1870).

Cattle disease prevails in the District of Darjeeling, chiefly about Kurseong, Gyaburee, Sonada, and Rhumtshool—all close to Kurseong.

Statistics.

The name of disease in the vernacular is *chupchoopia*. The date of outbreak of disease was about the middle of September 1870. The number of cattle attacked was about 500 bullocks and buffaloes up to 5th October 1870 in the Kurseong illaqua, and part at Rhumtshool, Darjeeling. The number of cattle which have died is about 140 or 150. The number of cattle which have recovered is not yet known. The number of cattle still ill is about 350 up to 5th October in the Kurseong illaqua and at Rhumtshool.

The disease is not confined to any particular village, but seems to have attacked the cattle employed in road-traffic from Sukna in the Terai, up the new road *viâ* Gyaburee, to Rhumtshool near Darjeeling. The disease is highly infectious. It is supposed to have been brought up from the plains, having followed the line of traffic on the new cart-road.

Symptoms.

The symptoms of the disease are as follows:—

No alteration takes place in the appearance of the coat. There is a sore on the hoof. It seems that after this appears the cattle lick the part affected, and thus become diseased in the mouth, which causes the tongue to swell. The mouth only waters; the body is hot; there is no cough or labored breathing; a slight quivering is to be observed; there is swelling of the tongue, but no difficulty in breathing; there is no change visible in the urinary or fæcal evacuations; the average duration of attack before recovery or death is from 3 to 8 days.

Treatment.

Medicine was administered by the persons from whom these inquiries were made, *viz.*, the Moonshee of the Darjeeling Carrying Company and the Duffadar of the Government Train between Darjeeling and Rhumtshool, who are believed to be the best authorities. They state that in few cases do the cattle recover.

KURSEONG.

Kurseong, 19th October 1870.

Cases of foot and mouth disease.

The Commission arrived here and inspected five bullocks near the Kurseong Bazaar affected with foot and mouth disease. Police Inspector Thomas, V. C., and several cattle owners were present, and all stated that the disease from which the bullocks have been dying on the line of road between Silliguree and Darjeeling during the past month is the same disease as shown by the bullocks now inspected.

Evidence of WAZIR ALLI, *Contractor of Government Bullock Train;* WALLI MAHOMED KHAN, *Contractor of Government Bullock Train;* KARBARRY, *Contractor, Lloyd's Carrying Company;* JUMMAN SING, *Contractor, Lloyd's Carrying Company, and his son* CHINTA. KURSEONG.

They have charge of different stages of the trains. The order is to carry 8 maunds (8 × 40 seers) in each cart; but latterly, during the last three months, much heavier loads have been put in the carts, *i. e.*, from 10 even to 14 maunds. Wazir Alli keeps 14 bullocks; all his bullocks have become sick from *chupchoopia* (*i. e.*, sore mouth) and *khorent* (*i. e.*, sore feet). Ten of the 14 have died up to date since August. The disease first appeared in August. It was brought by cattle coming up from the plains, and spread gradually stage by stage from Silligoree to Kurseong; some of the cattle belonging to the villages close to the road side have also become affected. Load carried. Prevalence of foot and mouth disease. Mortality. Origin of disease. Spread.

The symptoms of this disease are as follows:— Symptoms.

1, sore mouth with offensive breath; 2, fever for two or three days; 3, loss of appetite, but very great thirst; 4, blisters form on the mouth and on the tongue, and the skin peels off. Sometimes a little blood comes away from the mouth, afterwards the feet and fetlocks from the hoofs to midway between the knees and fetlocks become swollen. The animal becomes very lame. Blisters appear between the clefts of the hoofs and all round between the hair and the hoofs. The blisters break and discharge water, and in some cases flies blow the sores and maggots form in them. The urine is passed in a very slight quantity, is high coloured, and sometimes even bloody in appearance. Purging has not been noticed, but in a few cases the dung has been soft from feeding on green grass. No blood has been observed in the dung. The whole body of the diseased animal often stinks very offensively, and in severe cases the bullock does not eat at all.

Intense fever sets in and the animal dies in two days. The average duration of an attack is from 15 to 20 days. The reason why so many of the cattle have died is because the contractors are obliged to provide cattle to draw the carts, and many owners have not had a sufficieift number of cattle to allow the sick ones to remain at home and rest. Cause of great mortality.

The disease *matah, seetlah,* or *gootee* is known to these men. Jumman Sing and Hisson and Karbarry remember seeing many cattle dying from *matah* about five years ago. When cattle have *matah,* they have sore mouths, but not sore feet, and they purge a great deal, and with the purging blood is passed. Eruptions too are frequently thrown out all over the body, and the coat stands on end. The disease comes up from the plains; at least it did so five years ago. The same disease attacked sheep, goats, and pigs five years ago, and was very fatal. Jumman Singh lost 149 head of cattle, out of 150 which he had, of foot and mouth disease. He lost all the sheep and goats he had, *i. e.*, three sheep and six goats. Walli Mahomed Khan had 32 pairs of bullocks before the disease broke out in August, of which he lost 20 pairs; has about 26 still ill, including the 24 he recently purchased. Jumman Sing had 65 bullocks before the disease broke out, of these 25 have died; has purchased 26 since the disease broke out; has still 20 so ill that they are not fit for work. *Matah, seetlah,* or *gootee.* Prevailed in 1865. Symptoms. Origin of disease. Sheep, goats, and pigs. Mortality.

Evidence of MODAN MOHAN DOLLAR, *dated 20th October* 1870.

I am Agent for the Calcutta and Darjeeling Carrying Company at Kurseong, and have been so employed for upwards of a year. I have 60 bullocks employed on the road between Kurseong and Darjeeling, and three carts ply daily each way; one pair of bullocks draw a cart. The order is that each cart is not to carry more than 10 maunds. The disease which is now raging amongst the cattle first appeared six or seven weeks ago. I first heard of the disease at Sukna at the foot of the hills, and then at Chunbhatte, six or seven miles off. It gradually ascended the hill stage by stage. If the contractors are not able to supply the number of bullocks contracted for, we hire other bullocks (at present at the rate of Rs. 2 a stage, but the contract rate for bullocks for working daily is Rs. 18 a month) and deduct the amount from the contractors' monthly allowance. I weigh the different cart loads of goods in my office; but the bullock contractors are not present. At the present time, on account of the sickness of the bullocks, we have not been able to forward much of the goods we have in hand, and as Mr. Lloyd has guaranteed that he will forward goods from Darjeeling to Calcutta in six weeks, or pay demurrage at the rate of two annas a day for each package, we are most careful to forward goods with the least possible delay. The cattle of Lloyd's Train did not suffer last year. The rate of speed contracted for is half a mile an hour on the hill, and two miles an hour on the plain. Some of the contractors on the line have been obliged to use sick cattle. There is no clause in the agreement obliging the contractor to keep any spare cattle above the number contracted for. Load. Origin of disease. Spread. Effect of sickness. Sick cattle employed.

Evidence recorded on the road from Kurseong to Sonada, dated 20th October 1870. KURSEONG TO SONADA.

PATTUN SINGH, a pensioner, and his son DARYAFT SING, living at Dhobee Dora, had 16 bullocks; all of them became sick of foot and mouth disease; one died and 15 are recovering. Has no contract; works his bullocks on his own account. Sickness and loss.

KURSEONG. Sickness and loss.

DUNJEE RAM of Sipahi Dora, Contractor for the Government Train, keeps at this place 12 bullocks and two cows, of which three bullocks have died. Two died in one day, and the remainder are still ailing.

Foot and mouth disease in 1866. Rinderpest in 1864.

ASAB TAPPA, bullock keeper, on his own account keeps 11 bullocks. Three have died; the others are recovering. Saw the same disease four years ago, but it was not so severe then as it is now; remembers that the disease *matah* attacked cattle seven years ago in Mr. Herrold's time, and the Carrying Company lost a great many cattle from *matah*.

Sickness and loss. Feeding.

DOYAL TAREE keeps 12 bullocks on his own account. Also has five cows and two calves. All have been ill and three have died within the last 15 days. We bullock keepers never stall-feed our animals, we merely allow them to graze. The disease which has lately been amongst them is known here by the names *khureut*, *bagher* and *baghooli*. It attacked the cattle last year; occurs nearly every year; but it has never been so severe before as it is on this occasion.

LACHOOMAN SING states that three and a half years ago *gootee* attacked the cattle on this road.

Symptoms.

The symptoms of the disease are as follows:—

Rinderpest in 1867.

Mouth sore and discharging; eruptions on body, but not on feet; offensive breath; profuse purging; but he did not observe that blood was passed.

Foot and mouth disease.

JUNGLOO, living on the road side, four and a half miles from Kurseong, cartman, had eight pairs of bullocks; sold four pairs to different contractors; the remaining eight animals are sick now.

Symptoms.

The symptoms which he has observed are as follows:—

Sore mouth; could not eat at first; sore feet; are now eating a little, but their hoofs remain sore and render them unfit for work. Has lost none, but when a bullock becomes sick he at once takes him from work. He has no contract. Those bullock keepers who have contracts

Sick animals worked.

are obliged to continue working their cattle when sick; hence why they have lost so many.

BANSI is a cartman and has two pairs of bullocks. Has no contract. All four bullocks have been sick and are recovering; he took them out of work directly they appeared sick.

Chuttuckpore, six and a half miles from Kurseong, three miles from Sonada.

Sickness and loss.

ACHAL, servant of SAUDAGAR, Contractor, Government Bullock Train, had in this place 26 bullocks under his charge, of which 13 have died from *khoorah* during the last six weeks.

Loss.

PERSHAD SINGH, Contractor for Government Bullock Train, states that he keeps 13 pairs of bullocks for the train, and has lost 15 bullocks from *khoorah*. When he was a Clerk in Mr. Herrold's employ, he saw the cattle of the train attacked with *matah* in 1865 and 1866, and a great many of them died.

Evidence of TENCHUNG *Bhootea, Darjeeling, dated 22nd October* 1870.

Murrain during the Sikhim Campaign.

Tenchung Bhootea states that,—I have lived in the Darjeeling hills for the last 25 years and upwards, and am an agriculturist in Sikhim. I was there during the Sikhim war, and murrain broke out amongst the cattle of the British force.

Symptoms.

The symptoms shown by the sick cattle were,—drooping of the ears, and two or three days after the mouth watered, and purging commenced. The best conditioned cattle succumbed in four or five days, and the weak lingered for seven or eight days and then died. The color of the dung was reddish, and something white was mixed in it; it was mucus. I did not see any blood; the breath and dung were offensive, as also the body; I did not look inside the mouth. I did not observe any running from eyes and nose, nor any eruption on the body. [On first being questioned, the deponent said that the affected cattle became lame, but subsequently he was not quite positive about this].

Foot and mouth disease in Sikhim.

The deponent says that nearly six months after another murrain broke out among Commissariat cattle in Sikhim, and then the clefts of the hoof were sore. The hoofs dropped off; the affected animals died. I cannot be positive when the first casualty occurred amongst the cattle, but, as far as I can recollect, I think the first death from purging disease took place a fortnight after the British had left Darjeeling, and I am of opinion that the animals took the

Origin of disease.

disease from Darjeeling.

Rinderpest rare.

The purging murrain raged for some time, and then appeared the hoof disease, and there was disease among cattle during the war as long as the campaign lasted. The sickness was amongst Commissariat slaughter cattle. I had never before the Sikhim Campaign seen the purging disease, which in Sikhim language is called *yor*. The hoof disease I have often seen, and I had

Foot and mouth disease common.

seen it in Sikhim and Darjeeling before the war. It is called *khuchha*, and appears in some place or other every year. I have, however, heard from my father that he had seen the disease

History.

yor amongst the cattle. I cannot say how and whence this disease came; I had been to Thibet,

Thibet.

but I never happened to hear that *yor* was *known* amongst the Thibet cattle. We have medicines for the cure of this disease, but I doubt them. The deaths from *yor* are many more than from *khuchha*. The merchants who sell goods at the bazaar of Lassa came from Talloom Khalassa, Jegulethee, Guongchee, Faree, and Loka. From Lassa I and several like myself from Sikhim

and Darjeeling bring blankets and ponies and sell them in Darjeeling, Rungpore, Julpigooree, Purneah, Assam, and sometimes Calcutta. The goods are brought from Lassa upon ponies, donkeys, and yak cattle. Their feet are like those of ordinary cattle; they have large horns. I have not seen any die, but I have heard that yak cattle die of heat. I cannot describe the symptoms before death. I have seen the diseases *yor* and *khuchha* among sheep and goats, but not among horses; I don't know whether they attack the yak cattle or not. I do not know whether the diseases ever attacked the wild animals or not. Out of 20 head of cattle affected with *yor*, four or five only may survive. In case of the *khuchha* disease, with proper care and treatment not one will die. DARJEELING. Yaks. Sheep and goats. Mortality.

Evidence of NERBOO, *Interpreter, Darjeeling, dated 23rd October* 1870.

Nerboo, Interpreter of the Deputy Commissioner's Court at Darjeeling, aged 42, a native of Sikhim, says that his birthplace is 4 days' march from here. Has been 24 years in Government service; left home 30 years ago; visited his native place six years ago. Had, 11 years ago, about 30 head of cattle; this was just before the Sikhim war; but during the war a disease called *yor* broke out amongst the cattle of the British army then at Rungheet. My cattle were 16 miles off the British camp, and there was no road for cattle from the camp to my farm; no cattle were brought or came in any way from the camp to my farm. But the disease *yor* attacked my cattle and killed all but one. How the disease came from the British camp to my farm I have no idea. The villages nearest the army were not those first attacked, but the disease appeared in villages like my farm some distance off, and then other villages nearer to the camp became affected. My idea as regards the *contagiousness* of *yor* is this, that if the disease is amongst stock, some take it and some do not. Sheep and goats also take *yor*, and these animals died from it in the British camp like the cattle. I never had cattle affected with *yor* before, and never knew of *yor* in my own country. The only diseases I knew before that attack of *yor* were *floko* and *katcha* (foot and mouth disease). [The symptoms of *floko* described by deponent are those of hoven]. Murrain during the Sikhim Campaign. Spread in Sikhim. Contagiousness. Sheep, goats, &c. Other diseases.

The symptoms of *yor* that occurred during the Sikhim war were:— Symptoms of *yor*.

Coat staring; loss of appetite; great thirst; discharge from mouth (did not examine inside mouth), eyes, and nose; evacuations bloody; excessive purging with great force.

Cattle in good condition died more quickly than poor animals, generally in from 3 to 5 days.

In Thibet cattle are hardly ever seen; yaks are the beasts of burden generally used, and they bring merchandise from all the surrounding parts. When a Thibetan comes here, he is astonished to see our cattle. He never has heard whether yaks are affected with *yor* or other diseases; indeed he knows little about yaks. Yaks.

The Thibet merchants also bring some of their goods on ponies as well as on yaks.

In Sikhim and Thibet cattle are not used for agricultural purposes; the land is worked by hand labor.

Evidence of GELOONG, *of Sikhim, dated 23rd October* 1870.

I am 37 years old; left my country 25 years ago; have not visited my country since. My village, called Pandham, is six days' march from here. I had 20 to 25 cattle in Sikhim, and brought 15 of them to this place. I still have 20, including calves. The only disease I have seen is *khachha* (foot and mouth disease). I was not in the Sikhim war, but heard that the disease *yor* broke out among the Commissariat cattle. The hides here are not sold, but are used for making beds. I never heard of any cattle poisoning. The cattle here chiefly come from Bhootan, *rarely* from the plains. The Bhootan cattle are much larger than those on the plains. The lowest price of a cow is Rs. 15, and the best cows fetch as much as Rs. 30 to 35. Bullocks fetch from Rs. 30 to 35; each cattle owner keeps his own bull. We don't give our cattle anything to eat, they are allowed to graze; even our cows are not stall-fed. The hill cattle are not usually taken down to the plains; I have heard of hill cattle being taken down to the plains, but they die of heat. Foot and mouth disease. *Yor* (rinderpest). Hides. Poisoning. Breed. Price. Feeding.

Evidence of JUNGPEN, *a cattle doctor and a native of Lassa in Thibet.* LASSA IN THIBET.

I own cattle, and have seen disease of two kinds amongst cattle. One is *khuchha* and the other *chooneah*. *The former is the foot and mouth disease. In the latter the affected cattle purge, the stool being mixed with streaks of blood and mucus;* sometimes they also water from *the mouth, and matter-like stuff comes out of the nose.* They eat little or nothing, *but are very thirsty;* and if they drink a large quantity of water they die very quickly. I have seen three outbreaks of this disease. The *chooneah* appears in Thibet every 4, 5, or 6 years. The disease would stick to one place, provided the diseased cattle are not allowed to go out elsewhere, or its flesh were not sent out of the place; but if otherwise, the disease is sure to go wherever the diseased animals go, or flesh. The last outbreak in Lassa was in June, as also a former outbreak. Cattle diseases. Symptoms. Mode of spread

DARJEELING.
Mr. J. White.
History.
Origin of disease.
Sheep and goats, &c.
Treatment.

This disease (*chooneah*) has been in my country for the last 50 years or so, for I have heard my father say that during his lifetime there was an outbreak of this fatal disease. The disease is supposed to come from a country in the west, from which place the salt is brought to Lassa on yaks and sheep. The Bhooteas call the country to the west *Chhungsakha* (*chhung* means "west," *sakha* "salt.")* The sheep and goats in our country also get the disease, and *those wild animals which have feet like cattle.* I have seen in the jungles of Thibet a kind of wild goat dying of *chooneah.* On one occasion I saw 100 yaks belonging to the Thibet Rajah die of this disease, and on another occasion I saw at a watering place in the jungles 10 wild sheep lying dead from *chooneah.* I know that sheep and yaks that carry salt from the western country sometimes die of *chooneah,* not at the place where salt is made, but on their way to Lassa. In my country the urine of a male child of 8 years, black salt, musk, a stuff called *shekatmeum,* something like salt, and obtained on the salt grounds, are given. This medicine is given to the sick cattle internally, and it is applied to the sore mouth, and they recover in 5 or 6 days. This is the medicine for *khachha* disease; there is no medicine for *chooneah* (rinderpest). This is a very fatal disease, and there is hardly a case of recovery from it. It is something like *matuk* (human small-pox). There are no eruptions in this disease. We have no hot weather in Thibet; during the cold season we wear jackets made of skin, and in other months those made of cloth.

Evidence of MR. JOHN WHITE, *dated 24th October* 1870.

I am 38 years old. I have been in these hills for the last 10 years. I came here as a soldier in Her Majesty's 6th Foot, and for the last 6 years I have been an inn-keeper at Sonada and Darjeeling. During the whole of these 10 years I have had something more or less to do with cattle. The first time that I saw disease amongst cattle was in 1864, at a place called Maldram, about four miles the Sonada side of Kurseong. A Lepcha named Ramprost had in that year at Maldram about 150 head of cattle (buffaloes, bullocks, and cows); all these died of dysentery. They passed blood, and you could see some distance up the rectum, which had the appearance of being dirty, bloody, liver-colored: these cattle had no sore feet and they never appeared lame. I did not observe any other symptom. The next time I saw disease amongst cattle in these hills was in the year 1865. This was amongst the cattle belonging to Mr. Herrold's Transit Train from Punkhabaree to Darjeeling; a great many of these cattle died, and I saw some of them sick. They purged and passed blood. I don't remember these being lame, but at that time I was employed at some little distance at Hopetown. In the year 1866 the Municipality undertook charge of the train lately in Mr. Herrold's charge, and I was employed at Sonada to look after the depôt for two months; during that time the Municipality of Darjeeling lost a great many cattle, in fact so many, that they had to close the train for a time. The symptoms shown were purging and passing of blood, and total loss of appetite. I don't remember other symptoms. The natives said that this disease (purging and passing of blood) is always brought by the cattle that are brought from Nepal and from the interior of Nepal; and I have not heard of its having been brought from Bhootan. The reason why it is believed that the disease was brought from Nepal is that the newly-imported cattle are always the first to get the disease. It breaks out immediately after the arrival of new cattle: the newly-arrived ones are first attacked, and then the disease spreads amongst other cattle which have been on the hills for some time. In the same year (1866) Mr. John Stalkartt lost upwards of 50, out of about 64, head of cattle which he had in his tea garden at Hopetown. These cattle also died of the purging disease.

Disease in 1864.
At Maldram.
Symptoms.
Disease in 1865.
Symptoms.
Disease in 1866.
Symptoms.
Source.
Imported cattle.

At the end of 1866 my own cattle were attacked, some with small-pox and some with the purging disease; my stock consisted of 58 head of cattle. The symptoms of those attacked with what I call small-pox were,—loss of appetite, mopishness, coat staring, hair turned the wrong way, and on passing the hand all over the body, the skin was found covered with lumps of the size of a bean. These lumps did not break: some of these were afterwards attacked with the purging disease. The skin about the udder and thighs looked red and cracked-like. The cows affected stopped giving milk. I lost 6 cows, 1 bullock, and about 17 or 18 young stock; all of these died of purging; about half of my cattle did not get disease. Those cattle of mine which recovered have not suffered from a second attack, although there has been disease amongst cattle in the neighbourhood every year since about September or October. I believe the disease to be contagious, because it always breaks out first among the working bullocks, especially those which have lately come from Nepal. In 1868 I bought the herd of a gentleman leaving Kurseong; the herd consisted of 23 head of cattle. They were attacked with disease in October, and all died except one. The only symptom was constipation of the bowels, and nothing else. The remainder of this herd and my other cattle were immediately afterwards attacked with the purging disease. The rest of the new herd died except one, and, if I remember rightly, I lost also about 20 of young stock of my old herd. The new cattle had been purchased from Mr. Mann, of the Forest Department. Probably Mr. Mann's herd

Small-pox.
Second attack.
Contagiousness.

Geography.

* The salt works spoken of by witness are found on the map to be in longitude 85°, latitude 30°, in a straight line about 150 miles north-west of Mount Everest. Chornapary is about 180 miles west of Sarka (the salt works) on the borders of a large lake (latitude 36°, longitude 81°). Janglachi is about 150 miles west of Lassa (latitude 29°, longitude 88°). Lassa is in longitude 91°, latitude 29°. The inabitants of these different places meet once a year at Sarka, and invariably *yaks,* sheep, &c., laden with salt returning to Lassa, &c., become affected with *chooneah,* (rinderpest,) and some die on the road. The cattle going from Lassa to the salt works continue healthy, but those returning become diseased.

DARJEELING.

became affected from a change of pasture. Kurseong is a warmer and milder climate than Sonada, and the herbage is of course drier up at Sonada than at Kurseong in the month of October. I know that foot and mouth disease occurs more or less every year in these parts since the year 1868. I have heard that the purging disease has occurred amongst the cattle of my neighbourhood, but I have not lost any of my old cattle from it; and I am inclined to believe that all of them have had the purging disease some time or other, as I have lost young stock since 1868 from the purging disease. I know that the foot and mouth disease, which is now so prevalent here, is so contagious, that I don't allow my cattle to go out on the road for fear of catching the disease, and consequently not one of my cattle has been affected.

Climate.

Frequent prevalence of cattle disease.

Sonada, 24th October 1870.

ULLEE KHAN, about 45 years old, states that,—I am a Chupprassee employed under the Calcutta and Darjeeling Carrying Company. I am a native of Chupra in Behar, but I have been in the hills of Darjeeling in different capacities for the last 17 years. I have been in this depôt for the last 8 or 9 months. The Company have lost 22 bullocks from a disease that we call *khoorak*. The mouth salivates and the hoof gets sore, and the affected cattle gradually die; they are however never off feed. There are still 27 bullocks ill here: we have not allowed the sick cattle to work. We apply a lotion of alum, bluestone, and some bark, and wash the mouth and hoofs therewith. Never before have I seen a like disease here or elsewhere, although I heard on previous occasions that cattle had died in the hills of certain sickness. What that sickness was I was never told. I have also been told that a disease called *matak* attacks the cattle.

Foot and mouth disease.

Symptoms.

Treatment.

DISTRICT OF GOWALPARAH.

GOWALPARAH.

Statement furnished by BABOO GOONABHI RAM BUROOAH, *Extra Assistant Commissioner, Gowalpara, dated 7th April* 1870.

The following information applies to the Gowalparah District.

The value of cattle in this district is as follows:— Value.

Now a bullock costs Rs. 16, cow Rs. 12, male buffalo Rs. 20, female buffalo Rs. 35. Ten years ago a bullock cost Rs. 12, cow Rs. 8, male buffalo Rs. 15, female buffalo Rs. 25.

Bullocks, male buffaloes, and in certain localities even cows, are employed in ploughing lands. People who have several sorts of cultivation employ them throughout the year. Uses.

Bullocks and male buffaloes in certain localities are employed as beasts of burden. They are treated in various ways, but not with so much care and attention as the nature of the case demands.

Female buffaloes and cows are all—at least those that are fit—used for dairy purposes.

Cows are kept in houses or sheds, buffaloes in the open air, near bheels, &c. The sheds are built of bamboo and grass. They are from 20 to 100 cubits in length, and 10 to 20 cubits in breadth, without any opening, with the exception of the door for ventilation, or in certain cases without any proper reed wall round the house. The calves are kept in a separate room, and the cow-keeper also sleeps in that room. In certain localities cows are at night kept in *machans*. Fire always burns in the sheds. Housing.

Bullocks, &c., graze in the fields. At home they are allowed to eat dry or green grass, *bhoosee*, mustard cakes, *kalai*, or rice mixed with salt; they drink the water of rivers, bheels, &c.; the grasses on which they feed are called *durba, kolie, nara, nal, khogra, bhor, para, kher*, &c. Feeding and watering.

Cattle are housed at night in all the seasons of the year. In certain places cows are not taken much care of during the months of Magh (January), Phalgun (February), and Cheyt (March), *i. e.*, after the *solee* crop is reaped.

Cattle are herded and driven to *churs* or islands with new grass and jungle, as well as places adjacent to *bheels*, &c. The distance does not exceed ten miles. Herding.

The general condition of cattle depends on the nature of the locality, pasture, and care; on the whole, the condition is healthy. Condition.

No special measures are adopted for this purpose; no bulls are kept. With regard to buffaloes, wild buffaloes (male) are preferred to domestic ones for breeding purposes; when a wild bull (buffalo) is in the *bathan* or herd, great care is taken not to disturb him. Stock how kept up.

Cows are imported very seldom from Rungpore, Mymensing, Cooch Behar, and certain other adjacent districts. Importation.

Buffaloes are brought for sale from Purneah, Mozuffurpore, and other districts. The average price of a female buffalo is Rs. 20, and a cow Rs. 10.

There is a class of men who buy and sell cows and bullocks in markets and villages. A seller must be identified by a known person before he can sell cows, &c. Buying and selling. Hats, markets, &c.

People from Purneah, &c., who trade in buffaloes here, stop in certain places whence they sell them.

GOWALPARAH.

Export. There is very seldom any export of cattle; bullocks for agricultural purposes are occasionally exported.

Hide trade. There is no export of hides. *Moochees* or *chamars* are the persons who have now commenced to deal in hides. The number appears to have increased of late.

Garrows sell hides in the *háts*, and the value (highest) per hide is Re. 1. The *beparees* of Dacca get hides from Calcutta, &c., for sale.

Mortality. The ordinary mortality is 4 per cent., and that from plague 40 per cent.

History. The oldest of men living cannot give any satisfactory account on this point. The increase of communication between one place and another has brought and spread the plague more and more. Plagues occurred in 1851-52, 1868-69: between these years also the plague raged in the district; but it was very severe.

Contagiousness. Plagues are contagious diseases. Villages which have less or no communication with places where plague prevails suffer less from its effects.

Season. Plagues prevail in Kartick (October), Magh (January), Phalgun (February), Bysack (April), and Jeyt (May).

Different varieties are apt to prevail at different seasons; diarrhœa and sore leg and swelled throat and tongue prevail after the rainy season, as well as when the rains first commence. *Bussunto* or small-pox prevails in Magh and Phalgun: this disease rages virulently for one month, generally from full to new moon, and *vice versâ*.

Liability. The proportion per cent. of attacked is 60 per cent.; the proportion per cent. of recoveries 20 per cent.; the proportion per cent. of deaths 40 per cent.

Symptoms. Cattle of less than three years of age are most liable to *bussunto;* it especially prefers weak animals. Its symptoms are as follows:—

There is shivering in certain cases; the appetite and rumination are less than usual; the skin is hot; sometimes the hairs fall off, even in slightly touching the body, and sometimes not; the tongue and throat swell; there is difficulty in breathing, and cough; also looseness of bowels, mucus being passed in most cases; the secretion of milk is suppressed; the animal stands or lies down with closed eyes and drooping head; appears very dull and inactive.

Contagiousness. I am of opinion that the disease is contagious.

Sanitary measures. No sanitary measures are adopted. The sick and healthy are not separated.

The carcasses are mostly thrown into the open fields, on river banks and uninhabited localities; carcasses are never buried.

Moochees near the stations take away the hides when they can, but, generally speaking, no separate measures are adopted for their disposal.

I believe that cattle epidemics either precede or follow cholera epidemics.

Weather. Cattle plague breaks out generally before or after the rains. Heavy falls of rain rather increase the mortality.

ASSAM DIVISION,

COMPRISING THE DISTRICTS OF KAMROOP, DURRUNG, NOWGONG, AND LUCKIMPORE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	.....	...	Page 267.
Assam.	*Officiating Secretary, Board of Revenue, Lower Provinces, to the Secretary to the Government of Bengal, Revenue Department.*	.....	17*th January* 1854	*An account of the murrain which prevailed in Assam in* 1853. *This and the three following papers are printed in the Journal of the Agri-Horticultural Society, Vol. XIII, page* 270.
Luckimpore Seebsaugor.	*Dr. Long, to Captain Holroyd, Deputy Commissioner of Seebsaugor.*	.....	12*th August* 1853 ... 28*th September* 1853	*Describes the symptoms and post-mortem appearances of the plague of* 1853.
	Assistant Surgeon A. Maclean.	54	14*th November* 1853	*Ditto ditto.*
	Captain Dalton ...	146	18*th November* 1853	*On the same subject.*
Assam.	*Colonel Agnew, Officiating Commissioner of Assam.*	4	19*th January* 1864	*Selections, Bengal Government, page* 5. *Gives extracts from the reports of District Officers referring to cattle disease.*
	Lieut.-Col. Hopkinson, Commissioner of Assam.	322	11*th August* 1866...	*Selections, Bengal Government, page* 114. *Reports on an outbreak of rinderpest in August* 1865 *in Cherrapoonjee, Kassia Hills.*
Durrung.	*Major Lamb, Deputy Commissioner of Durrung.*	612	3*rd October* 1867 ...	*Selections, Bengal Government, page* 166. *Reports on an outbreak of cattle disease in the western part of the district.*
	Dr. A. Inthurn, Civil Surgeon.	50	10*th September* 1867	*Details the symptoms of the disease—rinderpest.*
	J. J. S. Driberg, Esq., Extra Assistant Commissioner, Mungledye.	229	13*th September* 1867	*Selections, Bengal Government, page* 169. *Describes the murrain which prevailed in the Mungledye Sub-division.*

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Durrung.—*contd.*	*Major Lamb* ...	456 470 506	*19th August* 1867 *22nd August* 1867 *2nd September* 1867	*Selections, Bengal Government, page* 172. *Further reports on the same outbreak.*
	Ditto ...	.....	1st February 1870	Statement in Form No. 4, p. 270.
	J. J. S. Driberg, Esq., of Mungledye.	.....	20th January 1870	Statement in Form No. 4, p. 270.
	C. P. Bruce, Esq., Tea Planter, Mungledye.	.....	12th January 1870	Evidence recorded by Cattle Plague Commission, p. 272.
	J. D. Campbell, Esq., Tea Planter.	.....	Ditto ...	Ditto ditto, p. 273.
	Major Lamb, Deputy Commissioner, Durrung.	1222	8th January 1870	Reports on murrain in the Orang Mouzah, from June to December 1869, p. 273.
	G. Grant, Esq., Extra Assistant Commissioner, Durrung.	1175	29th December 1869	
Kamroop.	Colonel Hopkinson, Commissioner.	252	5th September 1868	A careful description of murrain which prevailed in Kamroop in April and June 1868, p. 274.
	Dr. Purves, Civil Surgeon of Gowhatty.	73	30th August 1868	
	Syed Sekawut Hossein, Pensioner, Gowhatty.	.....	15th February 1870	Evidence recorded by the Cattle Plague Commission, p. 276.
	Baboo Gunga Nauth, Moonsiff and Subordinate Judge of Gowhatty.	.....	Ditto ...	Ditto ditto, p. 277.
	Colonel R. Campbell, Gowhatty.	.....	Ditto ...	*States that disease was so severe in* 1849 *and* 1850 *that the carcasses could not be removed.*
	Assistant Commissioner of Kamroop.	*Form* 1	Ditto ...	*Information referring to several Mouzahs of the Kamroop District, showing that rinderpest and foot and mouth disease prevailed extensively in that district in* 1869 *and* 1870.
Assam.	Colonel Agnew ...	154	18th May 1869 ...	Reports outbreak of murrain in Seebsaugor and Luckimpore in April and May, p. 277.
	Ditto ditto ...	195	18th June 1869 ...	Gives a further report of the progress of murrain in the several districts of Assam, p. 279.
Seebsaugor.	Captain Campbell ...	4	3rd January 1870	Return in Form No. 1, showing 112,415 deaths from cattle disease, from 30th March 1869 to 30th January 1870, p. 282.
Luckimpore.	John Campbell, Esq., Extra Assistant Commissioner, North Luckimpore.	80 22	4th September 1869 22nd March 1870...	Information regarding an outbreak of cattle plague in the North Luckimpore Subdivision, p. 282.
	Ditto ditto ...	.....	26th March 1870...	Statement in Form No. 4, p. 284.
	S. Campbell, Esq. ...	.....	26th January 1870	Ditto ditto, p. 287.
	Captain Gregory, Deputy Commissioner of Luckimpore.	877	15th January 1870	Describes the murrain prevailing in the District of Luckimpore and the sanitary measures adopted to check it, p. 289.
	Ditto ditto ...	.....	9th February 1870	Evidence recorded by Cattle Plague Commission, p. 290.
	District Superintendent of Police, Luckimpore.	.....	*30th November* 1869	*States that the villagers of Madarkhat objected to have their cattle treated by Mr. Farrell's Salootries, because of their want of success and their conveying the disease from one place to another.*

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Assam.	Mr. Farrell ...	Letter ...	10th January 1870	Details his observations on cattle murrain in the 24-Pergunnahs, Jessore, and Assam, p. 292.
	Ditto ...	Evidence	21st January 1870	
	Ditto ...	Letter ...	21st February 1870	
	Ditto ...	Report ...	2nd April 1870 ...	
Luckimpore.	Dr. J. B. White ...	Letter 70	2nd October 1869...	Gives nature, symptoms, and treatment of the prevailing murrain, p. 308.
	Ditto ...	Letter ...	11th January 1870	
	Ditto ...	Evidence	11th February 1870	
	B. E. C. Comber, Esq., Tea Planter, Assam.	.....	10th February 1870	Evidence recorded by the Cattle Plague Commission at Debrooghur. ... p. 312.
	Revd. E. H. Higgs ...	.....	Ditto ...	... p. 315.
	Baboo Nobin Chunder Burooah.	.....	11th February 1870	... p. 318.
	H. E. S. Hannay, Esq., Tea Planter, Assam.	.....	Ditto ...	... p. 319.
	Captain J. F. FitzG. Colagan.	15	22nd February 1870	Information in Form No. 4, p. 321.
	Alliga, Mouzahdar of Lahowl, near Madarkhat.	Evidence	27th January 1870	Evidence recorded by the Cattle Plague Commission at Madarkhat. ... ... p. 322.
	Collia, Mouzadar of Ekratoolee, Mattibar.	.....	28th January 1870	... ... p. 322.
	Mathbas, Mouzahdar of Meripittar.	.....	29th January 1870	... ... p. 322.
	Sadun Chunder, Seristadar, Political Agent, Debrooghur.	.....	30th January 1870	... ... p. 322.
	Futtick Ram, Mohurir, Farmer.	.....	31st January 1870	... ... p. 323.
	Dhoni Ram, Mohurir, Muttuck Tea Co., Limited, Lahowl.	.....	Ditto ...	... ... p. 324.
	Muliah, Mouzahdar of Jugibahar.	.....	Ditto ...	... ... p. 326.
	Borick, Mouzahdar of Madarkhat.	.....	Ditto ...	... ... p. 327.
	Villagers of Madarkhat ...	.....	1st February 1870	... ... p. 328.
	Lahor ...	.....	Ditto ...	... ... p. 329.
	Muloha ...	.....	Ditto ...	... ... p. 329.
	Moosah Kolita ...	.....	Ditto ...	... ... p. 330.
	Hood Gossain ...	.....	2nd February 1870	... ... p. 331.
	Mohun Gossain ...	.....	3rd February 1870	... ... p. 332.
Assam.	Colonel Agnew, Commissioner of Assam.	118	6th April 1870 ...	Forwards reports from District Officers on the subject of the importation of buffaloes, p. 333.

HISTORICAL SKETCH.

It is certain from the oral testimony of several inhabitants of Assam, obtained by the Commission on the occasion of their visit to that province, that cattle disease prevailed there previous to the British occupation. This event dates from 1824, when Assam and its Dependencies were annexed to the British territories during the first Burmese war. They were formally ceded by the Burmese by the treaty dated 24th February 1826. The ceded territory was attached to the Commissionership of the north-east and Rungpore. In 1833 the territory of Upper Assam (the Districts of Luckimpore and Seebsaugor, excluding Suddya and Matack) was placed under the administration of Rajah Poorundur Sing, but in consequence of the failure of that Chief to provide adequately for the protection and well-being of the country and its inhabitants, and in consequence also of his neglect to render the stipulated tribute, the territory was resumed in 1838. After resumption it was administered by the Government of India in the Political Department, through the Commissioner of Assam and Governor General's Agent, North-Eastern Frontier, till 1839, when by a proclamation, dated 31st July, it was annexed to Bengal. The earliest murrain of which information could be obtained was that which occurred in the District of Seebsaugor in the year 1722, Sicabda (1797). This fact was communicated to the Commission by Baboo Mohun Chunder Burooah, Moonsiff of Debrooghur, who had heard the circumstance mentioned by his father.

1797.

Veterinary Surgeon Farrell writes in his report, dated the 2nd April 1870, as follows :—"I came across an old Gossain who produced a book written in the Assamese character, and read from it that in the year 1818 the Burmese invaded the country with a large army, and that soon after their arrival in Assam a great plague broke out amongst the army cattle and destroyed them all, spread into the country, and committed similar devastation." The next notice of murrain is by Major Thomas Lamb, Deputy Commissioner of Durrung, who states that the first plague known in that district occurred in 1825, but that no detailed account of it is procurable. A witness, Mohun Gossain, deposed that murrain existed in the District of Rungpore or Seebsaugor 10 or 12 years before the English took over the government of that district (1838). Another witness, Gunga Nauth Nauth, Moonsiff and Subordinate Judge of Gowhatty, while informing the Commission that a plague prevailed in Tezpore in 1848, said that his father, then a man of 50, told him that a similar plague had prevailed when he was a young man of 28 or 30. This again gives the year 1824 or 1826. He also stated that before the British rule there was no regular communication between Assam and Bengal. The only cattle that ever came into the country were a few sent to the Assam Rajah by the Rajahs of Gowalparah and Cooch Behar in the shape of buffaloes. Another witness, Hood Gossain, aged 65, a resident of Lahowl, District Luckimpore, and a Government pensioner, told the Commission that cattle plague had occurred in the year 1830 or 1831. The next outbreak of which there is any record or recollection is that which took place in Durrung and Kamroop in 1848, 1849, and 1850. The murrain at Tezpore was witnessed by Colonel R. Campbell, who says :—"In 1849 and 1850 plague attacked cattle at Tezpore, and so many cattle died that it was found impossible to remove them." In 1852 and 1853 a severe murrain prevailed throughout Assam. Mr. Grote, Secretary to the Board of Revenue, estimates the total mortality at 120,000 cattle. The symptoms and *post-mortem* appearances of this plague were carefully described by Drs. Long and Maclean in the Journal of the Agricultural and Horticultural Society, volume XIII, page 270. The disease is said by Dr. Maclean to have commenced in Kamroop in 1852, and gradually to have worked up the valley through Nowgong and Seebsaugor to

1818.

1825.

1830.
1818.
1849.
1850.

1852.
1853.

HISTORICAL SKETCH. Luckimpore. The Revd. E. H. Higgs, a resident of Debrooghur, carefully
1854. studied the disease in that station in 1854 and 1855.
1855. He states that it was imported from Golaghat by a detachment of sepoys rejoining their corps at Debrooghur. He also states that at that time the natives informed him that the district was visited by murrain every 20 years, and that since 1855 it has prevailed more or less every year throughout the district.

In 1864 the Commissioner of Assam reported upon the subject of cattle murrains in reply to a general circular issued by the Government throughout Bengal. The outbreak of 1853 is mentioned by the Deputy Commissioner of Nowgong, who put down the number of deaths at 21,625 in that district.

The Deputy Commissioner of Seebsaugor states that in 1856 there was great
1856. mortality among cattle. From Kamroop the following report was received by the Commissioner:—"A cattle murrain, apparently similar to that mentioned in the correspondence," (Madras) "has been known in this district during the past eight years (1856-64) in the months of April and May and September and October." Cattle murrain
1860. visited the District of Durrung in the years 1860,1861, and
1861. 1862; and the Deputy Commissioner observes that the
1862. tracts visited in 1860 were those in which the disease made least havoc in its next visit, and that one attack of the disease confers immunity from a second; and in the Seebsaugor report it is stated that "domestic animals alone were not attacked, as deer and other wild animals were found dead in the jungle with the same symptoms." Dr. White also stated in evidence that rinderpest prevailed in the Luckimpore District in 1861, and that outbreaks have been of yearly occurrence since then. Mr. J. D. Campbell, a Tea Planter
1864. of Mungledye, Durrung, mentioned that during the monsoon of 1864 foot and mouth disease prevailed in the district; and Mr. Driberg states that this disease is very common in that district, but seldom fatal. Colonel Agnew's general conclusion in 1864 was, that disease had prevailed in different districts of the province at various intervals within the last 10 years. Colonel Hopkinson, writing in August 1866, states that in the Kossyah Hills, and notably at Cherrapoonjee and its vicinity, a cattle
1865. disease was prevalent in August 1865, and showed itself to be very fatal. No reports of any epizootic disease among cattle had been received by him from the other districts since 1864.

Captain John Gregory informed the Commission that there was murrain
1866. among cattle in Nowgong in October and November 1866. A violent outbreak of cattle murrain took place in the western portion of the Durrung District, more particularly in the Sub-
1867. division of Mungledye, in 1867. The disease commenced in April and subsided in Septemiber. The loss, according to the return submitted by Major Lamb, the Deputy Commissioner, was 5,971 head of cattle. Mr. A. Imthurn, the Civil Medical Officer, gives the symptoms of this outbreak; he mentions particularly that no unsound state of the hoof was perceptible, and no case of recovery heard of. This description and the evidence of Messrs. Driberg, Bruce, and Campbell leave no doubt that the outbreak was one of rinderpest.

In 1868 severe murrain broke out in Kamroop. The disease appeared
1868. with great severity in April, May, and June, and affected not only cattle, but also sheep, goats, pigs, and wild animals. Dr. Purves' description of the disease leaves no doubt that it was rinderpest. It also prevailed at the same time in the Kossyah Hills and spread gradually into Central and Upper Assam, namely, into Nowgong, Seebsaugor, Durrung, and Luckimpore. The fortnightly reports of mortality

called for by the Commissioner and summarized in Appendix No. 3 show that during the years 1869 and 1870 murrain continued to prevail in all the districts of the Division. The disease was introduced into North Luckimpore in March 1869 by a batch of Bengalee buffaloes passing through the villages of Narainpore and Bangfang, near the Dikrang river. One of these buffaloes died of murrain close to the camp of the Deputy Commissioner. The disease spread through the sub-division during the succeeding months before it had appeared in the southern part of the district. The introduction of the disease into Debrooghur and its vicinity was precisely similar to the mode in which it was imported in 1854, namely, by a detachment of sepoys rejoining the head quarters of the 42nd Assam Light Infantry from Golaghat, where the disease was raging. This happened in June 1869. This Division was visited by the Commission in January and February. An hospital was established near Debrooghur and systematic operations conducted. A large mass of information was obtained from officials, planters, and natives, and is printed in detail in the sequel. The information obtained with regard to this Division is very complete, considering the difficulties in collecting it—physical and moral—which exist; and as here the first impressions of the Commission were gained and the most deadly disease witnessed, the evidence amassed has not been curtailed. Towards the close of the year the disease gradually died out, and from the December reports it appeared that only a few scattered cases were occurring.

HISTORICAL SKETCH.

1869.
1870.

DURRUNG.

DISTRICT OF DURRUNG.

Major T. Lamb. *Statement furnished by Major* T. LAMB, *Deputy Commissioner, Durrung,—dated 1st February* 1870.

Locality. The District of Durrung extends over 3,055 square miles. The soil is loam and red marl, and the subsoil sandy.

Different breeds. The different breeds of cattle in the district are Assamese cows and buffaloes, and a few buffaloes imported from Bengal.

Average value now and 10 years ago.

	1859.	*Present value.*
Cows	... Rs. 2-8 to 4-0	... Rs. 10 to 12
Bullocks	... „ 4-0 to 5-0	... „ 15 to 20
Bulls	... „ 2-0 to 2-8	... „ 8 to 10

Uses for which cattle are employed. Cattle are employed from March to November for ploughing. Both bullocks and cows are used in the plough. A few bullocks are employed for draught in and about Tezpore; none for burden. Cattle so employed are housed at night and generally without food, taken out to plough on an empty stomach from daybreak till noon, and then grazed till about 6 P. M. In and near Tezpore cattle are kept for dairy purposes.

Mode of housing. Cattle are closely packed in thatched sheds in the villages without fodder; many of the sheds have thin reed or split bamboo walls, and many have no walls at all. The floors are of earth slightly raised and swept daily.

Mode of feeding and watering. Cattle are grazed from 6 to 10 hours during the day, during which time they find water for themselves. Owing to drought, forage is scarce after the rainy season until the rice crops are garnered; the cattle are then grazed on the stubble.

Stock how kept up. The Kacharees stack rice straw for fodder. The varieties of grass eaten by cattle are known as *oollo, burunga, doobaree,* and *dull.* Water is obtained from tanks and bheels (or jheels) and watercourses. The general condition of cattle is lean and weakly. The stock of cattle in the district is kept up by breeding. No special bulls are kept.

Importation is not general. A few buffaloes are imported from Bengal during the months of January to March *viâ* Kamroop, along both banks of Berhampooter to Poshorooghat, and Munguldye and Booreegooma.

The average price paid is as follows:—

Female Bengalee buffaloes	... ... Rs. 30 to 35
Male ditto	... ... „ 15 to 20

Mode in which cattle are bought and sold. There are no regular markets. It is frequently necessary to go two or three days' journey to purchase a yoke of bullocks.

There is no export of cattle from the district nor any trade in hides.

Mortality. The ordinary mortality varies considerably. From what I have learnt, in some portions of the district the percentage of mortality is as much as 20, and in others as low as 6 to 10.

History of plagues. The first plague which occurred was in 1825; no account procurable. Second in 1850, when Bengalee buffaloes are said to have been first imported in Falgoon (February). Third in 1861. Fourth in 1867. Fifth in 1868.

Symptoms are referred to in this office letter No. 1175 of the 29th December 1869.

Season. The seasons in which plagues prevail are from January to March, when the cattle are in the best condition. The plague prevails from one to two months in each place. From what I

Contagiousness. have learnt from Mouzahdars and others, the disease is supposed to be infectious.

Treatment. Mr. Williamson of Behalee informs me that he administered a tolah of opium dissolved in half a quart of rum with good results, and Mr. Lyell supports this opinion.

Sanitary measures. The transport of cattle from mouzahs where the disease was known to exist was prohibited.

MUNGLEDYE.

J. J. S. Driberg, Esq. *Statement supplied by* J. J. S. DRIBERG, Esq., *Extra Assistant Commissioner of Mungledye, Durrung,—(dated 20th January* 1870).

Locality. I am Extra Assistant Commissioner in charge of Mungledye Sub-division. In parts of District Durrung the soil consists of hard light-colored clay; in other parts a large quantity of sand is found with the clay.

The soil in the Dooars is a rich dark-colored loam over a bed of stones. The sub-division, with little exception, is level, and is intersected by numerous streams flowing from the Bhootan Hills.

DURRUNG.

I have no statistics from which I could give the number of cattle in the sub-division.

J. J. S. Driberg, Esq.

Breeds and value.

The only breed in the sub-division is the Assam breed. The following are the average prices of cattle now and ten years ago:—

	Now.	Ten years ago.
Cows	Rs. 9 to 12	Rs. 3 to 5
Bullocks	„ 16 to 25	„ 6 to 8
Bulls	„ 10 to 15	„ 4 to 5

Uses of cattle.

Cattle are used for agricultural purposes. In the Dooars both bullocks and cows are used, but in District Durrung, where the mass of the population are Hindoos, the former cattle are only used for ploughing. From the middle of December to the middle of January scarcely any land is cultivated, so that cattle are not then used; but at all other times they are in use. Cattle are not used for draught or burden.

No particular care is taken of cattle while employed in ploughing. They are put to work for about five hours a day and after that let loose to graze.

Housing.

The cattle are housed at night in thatched sheds, with bamboo or reed sides; the floor is raised and the sheds are daily cleaned. In some cases there is merely a roof without any enclosure.

Feeding and watering.

Cattle are always sent out in the fields to graze, they are never fed on grain; and as there is plenty of water in the immediate vicinity of almost every grazing ground, the cattle supply themselves with water.

There is generally a little scarcity of forage from about the 15th September to the 15th November. Owing to the cessation of the rains, the feeding grounds become parched and barren; by the 15th November a portion of the paddy has been cut and the cattle are put to graze on the pittars.

Cattle are fed at all seasons of the year on grasses known as *ollo, dubru, bosurgha* and *dol*. After the paddy has been cut they feed on the stubble; cattle are scarcely ever stall-fed; water is obtained from the numerous hill streams which flow through the sub-division.

Cattle are in best condition from the beginning of January, as from that time to May and June they are allowed to stray about and feed at large.

Breeding.

No special bulls are kept for breeding purposes. There is scarcely any importation of cattle from other districts; there may be a few cases, but it is not general.

Buying and selling.

There is no regular sale of cattle. When a ryot is in want of a bullock, he either hires one for a few days, or, if he is able, purchases one from his own or a neighbouring village. There are no hâts or markets.

There is no exportation of cattle nor hide trade.

Mortality.

Ordinarily, the mortality amongst the cattle is very small. When the disease was prevalent in the sub-division, a large number of cattle died, but it is almost impossible to give at the present time an accurate statement of the number of deaths.

History.

In 1860 or 1861 there was, I understand, a plague, when a large number of cattle died. Again in 1867 the disease appeared in this sub-division.

With regard to the nature, symptoms, &c., of this outbreak, I beg to refer to my letter No. 229, dated 13th September 1867. (*Vide* Selections, Bengal Government, p. 169.)

Statistics.

In the letter just referred to, I stated that about 18 per cent. of the cattle that were attacked with foot and mouth disease died. This I think is not far from correct, but I have no statistics from which I can reply to this question of the Commissioners.

From what I can recollect of the plague in 1867, cattle of all ages and both sexes alike suffered.

Contagiousness.

The disease is generally supposed to be contagious, but I have no data in support of this opinion.

Treatment.

No remedy was adopted in the disease which appeared in 1867.

Sanitary measures.

As soon as an animal is attacked, it is separated from the rest of the herd, and under recent orders all carcasses are buried, but no other sanitary measures are adopted.

Hides, horns and hoofs are never separated from the carcasses. Buffaloes and deer were attacked, and died in large numbers, especially the former.

In August last I ordered the separation of diseased cattle and the burial of carcasses four feet below the surface of the ground; the disease is said to have been thus confined to the places where it broke out, and the number of deaths reduced, until the disease disappeared.

Hides, horns, and hoofs were buried with the carcasses since August last; previously they were allowed to remain exposed and vitiate the whole atmosphere near the villages.

The disease is said to have carried off wild animals with cloven hoofs.

DURRUNG.
C. P. Bruce, Esq.

Evidence of C. P. BRUCE, Esq., *Tea Planter, Mungledye, late Extra Assistant Commissioner at Mungledye, in the District of Durrung, Assam,—taken 12th January* 1870.

Locality. I have resided at Mungledye for 10 years. The country is mostly flat, slightly inclined towards the Bhootan hills; it is subject to inundation in the rains; it has a clayey soil, and in some places sandy. The district is intersected by rivers coming from the Bhootan hills. The half of the area is cultivated and the other half jungle. I cannot give any approximation of the number of cattle in the district, or the number to the square mile. The cattle are

Breed. all of the small Assam breed. The Tea Planters import a few Bengalee bullocks, and a few Bhootan cows may be met with. Buffaloes are common. A bullock costs from Rs. 16 to 20

Price. a cow from 10 to 12. About 10 to 12 years ago the price of a bullock was Rs. 8 or 10

Uses of cattle. and a cow Rs. 5 or 6 The cattle are principally used for agriculture, and the Tea Planters use a few cattle for draught. Cultivation commences in March; the crops are reaped in May and December. Cattle are only used in the plough; they have to work in mud sometimes above their knees. The plough used is a small single-handed wooden one. The cattle are

Housing. kept in sheds at night; they are worked for about five hours and then turned out to graze; they are not used for draught or burden, except by Planters. Cows are largely used for dairy purposes and are housed at night, milked in the forenoon, and then turned out to graze. The proportions used for each purpose (*viz.*, dairy and agriculture) varies; generally

Sheds. it is about half. The Kacharees use cows for ploughing, but Assamese very seldom. The sheds used for housing cattle are made of bamboo, with mat walls and grass roofs; in some cases raised on *machans* (raised platforms of bamboo); in most, not so. The earth forming the floor is raised to a slight extent. These sheds adjoin the dwelling houses. Cattle are allowed

Feeding. to feed and water themselves. No fodder or hay, nor even rice straw is given, except by the wealthier classes. The kinds of grass eaten by cattle are known as *doopree, poyah, ooloo*, which are wholesome. The cattle are turned out to graze in the rice fields after the crop has been removed. They get water mostly in rivers and sometimes in tanks.

Herding. Cattle are always herded by day and housed at night. When the low lands are inundated, the cattle are collected, herded, and driven to the highest land in the district. They

Condition. are not sent to other districts. Their condition is generally poor; they are thinner during

Breeding. the cultivating season, and in very dry seasons they are particularly poor. Breeding is not

Importation. at all attended to, and no special bulls are kept. Buffaloes are imported by the main road from Bengal, they come generally in January and February; and sheep also are imported at the same season. Buffalo cows cost some Rs. 30 a piece. Cattle are bought and sold by

Markets. private bargain; there are no markets or fairs, and buffaloes are bought from dealers as they

Export. come. There is no export of cattle or hides from Durrung, and there is no local hide trade.

History. The Assamese do not wear shoes. I first heard of cattle disease prevailing three years ago; since then there has always been more or less about. Disease may have occurred to a slight extent previously, but it was not brought to my notice. The disease was epizootic, and consisted in an affection of the bowels. I observed in 1867 that it spread gradually northward and eastward, and it could be traced from village to village in those directions. The plague pre-

Season. vails from January to June and subsides during the rains. I only know of one variety; but

Foot and mouth disease. there is another slight disease consisting of a soreness of the mouth and feet curable in the early stage, and the Assamese have a medicine for it. I had three dairy cows attacked. I lost them all. My draught bullocks escaped, but they were kept separate on the tea plantation. One

Liability. of the cows was a Bhootan one. The breed, age, sex, and condition made no difference as regards

Symptoms. liability to disease. The symptoms which I observed were loss of appetite and rumination, skin hot, hair rough; did not observe any eruption; I noticed a swelling of the tongue and throat, and that there was a difficulty in breathing, but no cough; purging came on the second day; the secretion of milk was at first diminished, then entirely suppressed. The animal

Contagiousness. generally died in two days. I have no doubt that the disease is contagious, and highly so. My opinion is founded on my own experience. The disease proceeded from village to village. My dairy cattle caught it from being in contact with a diseased Assamese cow. I did not

Separation. separate the cattle, thinking that the better care they received would save them from infection. New bullocks which were kept in the tea garden, 5 or 6 miles distant from my house, were not allowed to graze beyond the garden, and they did not take the disease: this is generally the case. Assamese give no medicine to the sick cattle. No sanitary measures are adopted.

Disposal of carcasses. Carcasses are thrown out on the fields or into the river; they are not buried. The stench from the carcasses was dreadful during the prevalence of plague, and healthy cattle grazed in the

Other animals. vicinity. The hides, horns, and hoofs were not removed. I have heard of deer, wild buffaloes, and tigers being scarcer now than formerly: this may be owing to disease; the natives say so.

Cholera. In 1867 cholera prevailed simultaneously with cattle plague. Cholera also occurred a year or two before cattle disease appeared. There is no plague prevailing in Durrung at present. When

Rain. plague is prevailing, I think a heavy fall of rain seems to put a stop to it. The Tea Planters bring up their Bengalee bullocks by steamer. I have never heard of a Bengalee bullock either suffering from or introducing disease.

Evidence of J. D. CAMPBELL, Esq., *Tea Planter, Mungledye, Durrung, Assam,—taken 12th January* 1870. DURRUNG. J. D. Campbell, Esq.

I am a Tea Planter and reside at Mungledye, in the Durrung District. The sub-division of Mungledye is about 40 miles by 30. The soil is generally sandy and alluvial. The rivers running through the sub-division are the Berhampooter, the Mungledye, and several other small streams. In the station of Mungledye there are about 1,500 or 2,000 head of cattle. The station is about a mile square. The cattle are very small and of the country breed. The present price of a good cow is Rs. 12 and of a bullock from Rs. 18 to 20. Ten years ago they could have been bought for half the price. Bullocks are used for the plough. The land is ploughed in the months of May, June, July, August and September, for rice, sugarcane, mustard, muttye, kalai, &c., &c. Cattle are not generally used for draught or burden. When at plough the cattle work from sunrise to 10 A. M., ploughing about 2 beegahs of land; they graze during the rest of the day and are shedded at night. Every family keeps from two or three milch cows; the average amount of milk given by each cow is half a seer. The sheds are *kutcha*. The cattle graze and water at will; no grain is given them. When land is under cultivation, that is from May to January, the pasturage is limited and the cattle become very poor and weak. The kinds of grass eaten by cattle are known as *dhoop, ooloo* and *daranga,* the two latter being very coarse and generally used for thatching. The cattle are also very glad to get at marsh grass when the pasturage is scanty. At night the cattle are shedded, but not fed; they drink water at pools and ditches; very often the water is more or less foul. Cattle are herded on common lands, all the cattle from adjoining villages grazing together; this is done during the cultivating season only. After the harvest cattle are allowed to graze all over the country; they are then not attended to by cowherds, and are frequently not seen by their owners for days or weeks together, and some are occasionally killed by tigers; they are never taken to other districts for pasture. The cattle of the district always look a poor lot: in the cold weather they are in fair condition; but in the hot weather they are very weak from sheer want of food. The stock is kept up by local breeding; one bull is kept for about 20 cows. The bull is always loose with the cows. The buffaloes are treated like the cows, and very often a wild buffalo bull serves the cow. Cattle are not imported into this district. They are bought and sold by private bargain; there are no markets or fairs. There is no exportation of stock, except from the neighbouring Districts of Tezpore and Kamroop. There is no trade in hides. The ordinary mortality among cattle is about 5 per cent., that from plague at least 50 per cent. I have been in the Tezpore and Durrung Districts since 1864. In the monsoon of 1864 foot and mouth disease made its appearance. Few cattle died from it, but the lameness resulting from the disease interferes with the cultivation. In 1867 and 1868 the murrain *mowa* (cholera) carried off half the cattle in the district. I think it made its appearance in April; it was at its height in May and June. It gradually rose and gradually subsided; it died out about November 1868. The two murrains prevalent in Durrung are foot and mouth disease and *mowa*. I am of opinion that both diseases were imported and spread by infection. Murrains prevail generally about the commencement of the rains. I don't think scarcity of food and water the cause of the murrain. I think that both murrains last from July to November. I think 60 per cent. of stock were attacked, 10 per cent. recovered, and 50 per cent. died; 40 per cent. escaped attack. In the case of a cow and calf being attacked, the latter succumbs to the disease first. Murrain attacks cattle of all ages and both sexes, regardless of condition. I believe that both diseases are contagious, because in cases when disease has broken out among milch cows grazed, housed, and in every respect well cared for—being the dairy cows of the Planter's house—such cows all became affected and died. No sanitary measures were adopted. The carcasses were thrown into the river or out into the open fields. The hides, horns, and hoofs of cattle are never made use of. I have not seen any other animals affected; but the natives declare that wild buffaloes, tigers, leopards, deer, and all wild animals were found dead at the time the plague was raging. I have seen fowls too suffer from a kind of *mowa*. There is no murrain prevailing at the present time in Mungledye. Murrain assumes a more severe form during the dry hot weather. I have heard that a heavy fall of rain causes a decrease of *mowa*.

Locality. Breed. Price. Uses. Housing. Feeding. Herding. Condition. Breeding. Markets. Hides. Mortality. History. Diseases. Statistics. Season. Contagiousness. Carcasses. Other animals. Rain.

From MAJOR THOMAS LAMB, *Deputy Commissioner of Zillah Durrung, to the President of the Commission deputed to inquire into the subject of Cattle Disease,*—(No. 1222, *dated Tezpore, the 8th January* 1870). TEZPORE. Major Thomas Lamb.

In continuation of this office letter No. 1175 of the 29th ultimo, I have the honor to inform you that the cattle disease in Mouzah Orang therein referred to has disappeared since despatch of the letter above alluded to. The disease no longer exists in this district.

TEZPORE. G. Grant, Esq.

From G. GRANT, Esq., *Extra Assistant Commissioner, in charge Zillah Durrung, to the President of the Commission deputed to inquire into the subject of Cattle Disease,—(No. 1175, dated Tezpore, the 29th December 1869).*

With reference to your letter No. 100 of the 6th instant, received with the Government of Bengal and the Commissioner of Assam's Nos. 2777 and 312 of the 11th and 21st idem, respectively, I have the honor to state that the cattle disease has lately abated in this district, but in Mouzah Orang it has not yet disappeared; and submit the information therein called for.

Statistics.

1. Durrung District, Orang Mouzah.
2. Name of disease, *mawar*.
3. Outbreak of disease in June 1869.
4. Three hundred and five cattle attacked, or 15 per cent. of stock.
5. Two hundred and two died, or 10 per cent. of stock and 66 of attacked.
6. Ninty-nine recovered.
7. Four still ill.
8. About two thousand cattle belonging to the Mouzah.

Infectiousness.

9. The disease is infectious.

Origin.

10. Originated from the sick cattle brought into the district for sale.

Symptoms.

11. The hair stands on end; small pimples appear on the body.

There are no eruptions on the body or feet; eyes and mouth watering; body hot; cough and labored breathing are little; there were no shivering fits.

There was swelling of the throat; scarcity of urine during the attack.

12. Average duration of attack about one day.

Treatment.

13. No remedial measures have been used in separating diseased cattle from the sound ones.

DISTRICT OF KAMROOP.

KAMROOP. Colonel H. Hopkinson.

From COLONEL HENRY HOPKINSON, *Commissioner of Assam, to the Secretary to the Government of Bengal,—(No. 252, dated Shillong, the 5th September 1868).*

I have the honor to forward herewith copy of a letter from the Deputy Commissioner of Kamroop to my address, enclosing a report by Dr. Purves, Civil Surgeon of Gowhatty, on the cattle murrain which has been prevalent for some time back in the District of Kamroop, and I trust His Honor the Lieutenant Governor will consider Dr. Purves' report worthy of favorable acknowledgment.

From the Deputy Commissioner of Kamroop, to the Personal Assistant to the Commissioner of Assam,—(No. 94, dated Gowhatty, the 2nd September 1868).

With reference to your memo. No. 381, dated 8th ultimo, I have now the pleasure to send you herewith a report in original, only just received from Dr. Purves, the Civil Surgeon of Gowhatty, and which was promised in my letter No. 53, dated 8th July last, regarding the cattle murrain in this district.

H. R. Purves, Esq.

From HENRY R. PURVES, Esq., *Civil Assistant Surgeon, to the Deputy Commissioner of Kamroop,—(No. 73, dated Gowhatty, the 30th August 1868).*

I have the honor, in answer to your letter No. 184 of the 8th ultimo, to report on the cattle epidemic which has prevailed in this district, and even up to date has not entirely disappeared, as isolated cases are still continuing to occur.

In drawing up the report, I have received much assistance from the native doctors under my superintendence and the owners of cattle in the neighbourhood, who have furnished me with what information they could collect from personal experience on the subject. Several diseases have prevailed during the year,—such as *gootee, chupkah, bhoklah*, &c., but the affection requiring chief notice, and which has committed much ravages, is known amongst the Assamese by the names *mour, lerale mour, lahory, moorkee*, &c., which signify a disease resembling a combination of cholera and dysentery. *Mour* appears to me to be very similar to, if not identical with, the *puschima* of Bengal. This disease prevailed with great

Time and season.

severity throughout April, May and June, and it is difficult to estimate the number of cattle that must have perished; not only cattle, but also sheep, goats, pigs, &c., have been its

Other animals.

victims, and even *wild animals* seem not to have escaped its influence, as buffaloes, tigers, deer, &c., have been found dead evidently from a similar disease. The chief symptoms of this

Premonitory.

disease *mour* are the following:—At the commencement, the animal appears languid, stands apart from its neighbours, the skin dry, coat stares, ears droop, refusal of food. Although a little may be eaten the first day, there is an intense desire for liquids; about the second day a

clear viscid discharge takes place from the nose, eyes, and mouth; the abdomen gets distended, and diarrhœa sets in; refusal of all food, no rumination, the only apparent desire being for water; great difficulty of breathing ensues; the discharges from the different parts change their character and soon become offensive; the stools get very liquid and frequent, containing blood, mucus, &c.; the animal from extreme weakness is obliged to lie down: these symptoms go on increasing in severity, death generally occurring between the 2nd and 5th days, and in some instances in a much shorter period. The desire for liquids is a most prominent feature in the symptoms from the commencement; so long as their strength permits, they make every effort to reach water, and if successful, the large quantity they drink causes the disease to run its course to a fatal issue much sooner. The banks of rivers and edges of tanks and jheels are common places to find animals either dead or dying.

KAMROOP. Dr. Purves. Symptoms of *mour.*

The following are the chief *post-mortem* appearances presented in the cases I examined:— signs of severe purging before death; abdomen greatly distended; fœtid discharges from nose and mouth, with inflammation of the mucous membranes; and in some cases ulceration: inflammation of the conjunctiva. On opening the body, I found general inflammation of the cellular tissue, as also of the lining membrane of the larynx and trachea extending to the bronchial tubes; enlargement and inflammation of the cervical glands; lungs, as a rule, not much affected; effusions into pericardium; right side of heart filled with clotted blood. Liver and kidneys injected; gall bladder greatly distended; the different stomachs much distended with wind, and containing a little food and numbers of parasites; the latter are, however, said to be of common occurrence in healthy animals; general inflammation throughout the intestinal tract, with commencement of ulceration in some parts; but I saw no cases of severe ulceration of the intestines. Bladder contained a small quantity of high-colored urine. The disease is very fatal, and the general opinion is that from 75 to 80 per cent. of the animals attacked die. That it is highly infectious, there can be no doubt. When the disease appears, the natives consider that the only chance of saving their herds is at once to completely cut off all communication between the diseased and healthy animals. Goats placed in sheds with affected cattle contract and die of the disease.

Post-mortem appearances. Mortality. Infection. Segregation. Goats.

A Tea Planter residing some fifteen miles from Gowhatty, who has taken a great deal of trouble in furnishing me with what information he could collect, reports that near his garden there is a hill, in the neighbourhood of which large herds of cattle graze. On one side of the hill the above disease raged with great violence, whilst on the other not a case was known to occur.

The nature of the land and cultivation on both sides of the hill is very similar, and the only reason he could assign for the cattle on one side being exempt was, that they had no communication with those which were suffering from the disease on the other.

Infection.

It has been noticed in some cases of recovery that the animals are blind, or nearly so, and in some instance total disorganization of the structures of the eye has taken place. Treatment in the above diseases is generally of little avail. Although some animals which I treated did recover, they were so few that no satisfactory conclusions could be drawn as to the value of any particular method of treatment. It is difficult to assign any particular cause for the production of such a disease, but I am inclined to think that the active principle at work may be very similar to the poison of malaria. The affection appears during the rains and hot season, to a certain extent annually; but generally several years intervene between each visitation in an epidemic form. The rainfall in this district has been much less than usual during the present year, and this may probably have had something to do with the increased virulence of the disease.

Eye affection. Treatment Cause. *Season.* *Annual.* *Rainfall.*

Gootee or small-pox has also prevailed during the year, but to a much less extent than the disease just noticed. In small-pox death generally takes place before the eruption has time to develop itself. If the animal has strength to survive until the eruption appears, the natives look upon the case as comparatively safe.

Gootee. Eruption.

Chupkah or *khorah* and *bhoklah* cases have occurred, but to a very small extent.

In *chupkah* an eruption occurs, chiefly affecting the feet, mouth, &c.; ulcers form, and if not carefully looked after, maggots are developed in the sores. Fever and other constitutional symptoms are present.

Foot and mouth disease.

Bhoklah is an inflammation of the throat and trachea, causing great difficulty in swallowing.

Bhoklah.

Now that my attention has been drawn to the disease prevalent amongst cattle in this district, I will, in the event of other epidemics occurring, collect all the information I possibly can on the subject.

Dr. Purves, on the occasion of the visit of the Cattle Plague Commission to Gowhatty, furnished the following information, in addition to that contained in the report above printed:—

The cattle of this district are of the Assamese breed, small red-and-white animals. There are also a few Bengalee cattle—their number is on the increase—and a few Hansi cows, kept by Europeans for milking purposes. Male and female animals exist in pretty equal proportion in the district.

Breed.

GOWHATTY.

Housing. Cattle are housed in sheds constructed of bamboo matting and thatched, not raised or kept in the owner's house : these are used more as a protection against wild animals than for any other reason.

Feeding. Watering. Cattle are allowed to feed and water themselves; some people give them cut straw. Water is got from any available source.

Herding Breeding. Cattle are herded by day ; cowherds (boys) are employed. They are not driven to any distance for pasture; their condition is, as a rule, very poor ; no care is taken in breeding.

Importation. Importation is very small, a few Bengalee and Up-country cows and buffaloes are brought occasionally.

Markets. There are no markets, cattle are bought and sold by private bargain.

Exportation. There is no exportation either of cattle or hides.

History. The general idea is that plagues come about every fifth year, and last from the beginning of one hot weather to the commencement of next cold weather. The last murrain seemed to travel from the south northward along the river.

Liability. Breed, age, sex, and condition seemed to make no difference with regard to liability.

Separation. The natives believe that early separation of healthy cattle is the only way of preventing their being attacked.

Disposal of carcasses. Carcasses were left where the animals died.

Cholera. Cholera prevailed severely in 1869, cattle disease having passed over the district in 1868. This was also ascertained to be true with regard to the District of Nowgong.

Syed Sekawut Hossein. *Examination of* SYED SEKAWUT HOSSEIN, *Pensioner, late Meer Moonshee in the Agent's Office,—taken on the 15th February* 1870 *at Gowhatty.*

My birthplace is in the North-West, but sincethe year 1832 I have resided in Assam, since 1834 my head-quarters being in Gowhatty ; but I have always been on circuit with the Agent and have been all over Assam and Cooch Behar.

I have always ever since being in the country taken an interest in cattle, and have always had a large herd of them, having now from 60 to 70 head of cattle ; but I have no buffaloes.

Murrain in 1848-49. I was at Gowhatty in the year 1848-49, and at that time had a herd of about 80 head of cattle ; they were attacked with small-pox, and out of my whole herd I only saved three.

Symptoms. Pustules came out on the body of some of them, discharges ran from the nose and mouth, and in some cases blood and pus was mixed with their stools ; they died in two or three days. Fat and lean animals died alike, though those in good condition perhaps were able to fight longer

Origin. against the disease than others. I do not know where the disease came from first, but my neighbour who had some cows had the disease amongst his first, and mine caught it from his ; I had never heard of the disease before. Shortly after it had appeared in my village, I went out on circuit with the Agent in the direction of Gowalparah, and as we went we found the same disease raging there ; but whether it came from them to us, or from us to them, I

Wild animals. cannot say. One thing I remember is, that on our way down the river we noticed that wild buffaloes and tigers were killed by the disease. There is another disease prevalent

Mour. among cattle, called *mour* or cholera ; it, as far as I know, first made its appearance in 1848 or 1849. I never heard of it before, but since that time it generally makes its appearance every 3rd or 4th year, making its way from village to village. As far as I can remember, the disease in 1848 came from down the stream, "hati," and gradually worked up the river. Some

Progress of disease. of my cattle at the time were down at Chugund, a village about 12 koss down the stream, where the disease broke out ; then they were sent up to me here, and about 20 days after

Contagiousness. their arrival my cattle took it. I am of opinion that the disease is contagious and infectious.

Price. The price of cattle has greatly increased since I have been in this country, so also has the price of all other things. The disease among cattle may have a little to do with the price of them increasing ; but I am of opinion that the chief reason is that money is much cheaper

Buffaloes. than it was. Up to the year 1848 buffaloes used to be brought from Purneah to Gowalparah, but no further ; since that year they have brought them into Assam itself ; perhaps they may have introduced the disease. The reason the people in Assam buy the Bengal buffaloes is, that the Bengal animal, though less in size, gives more milk than the Assam one. I have never heard of any of the imported animals being diseased when they came into the country. Most of the imported ones die within 6 or 8 months after their arrival ; but if they get over the year, they are considered to be all right, and their price rises accordingly,—that is, the price of them at first is about Rs. 30, but if they survive the year they are worth Rs. 60.

Hides. There are some *Chamars* here, but they do not export the hides ; they work in leather, but for the most part get their leather from Calcutta. There is a small trade in the hides of wild buffaloes carried on by *beparees* but I do not know that they deal in the hides of tame ones. They send perhaps about 100 hides and horns in the course of 6 months ; they get the hides from the *shikarees.*

Foot and mouth disease prevails more or less every year, but not many cattle die of that; it is easily cured. GOWHATTY. Foot and mouth disease.

Examination of GUNGA NATH, *Moonsiff, a Subordinate Magistrate at Gowhatty,—(taken on the 15th February 1870, at Gowhatty).* Gunga Nauth.

My birthplace is in the Seebsaugor District. When I was 8 years old I came to live in the Tezpore District. I am now 46 years old. At the age of 12 I obtained employment under Government, and remained in the Tezpore District till 10 years ago, when I came to this one.

There are several diseases which I know of among cattle, but the chief ones are the foot and mouth disease, *khooree fatee*, cholera, *mour*, and 3rd, *matah* or *gootee*, small-pox. When I was in the Tezpore District 22 years ago, whilst my father was alive, in the year 1848, I remember that a plague broke out among cattle; at that time my father had a herd of 80 cows, out of which 45 died; he also had 35 buffaloes, out of which 33 died. My father was at the time Sudder Ameen at Tezpore, but he was also a great doctor, and was consulted by the Rajah and all the people in the district. He tried all sorts of remedies, but found none of any use. It was not only the cattle belonging to us that suffered, but all the cattle in the neighbourhood suffered in a like proportion. The disease was that which I have referred to above, under the name of *mour* or cholera. We considered the disease highly contagious and infectious. At the time we were of opinion that the disease came from lower down the stream, "*bati*," but I cannot say how it travelled up; we heard of it lower down and it gradually came up to us; it did not first make its appearance with us. I remember that at the time my father said that before the English raj commenced he had seen a similar plague among cattle having taken place. My father at the time of telling me this was about 50, and said that he was a young man about 28 or 30 at the time of the former plague. At the time of the Assamese raj there was no communication between this country and the Bengal country; the only cattle that ever came into the country were a few that were sent to the Assam Rajah by the Rajahs of Cooch Behar and Gowalparah as presents, in the shape of buffaloes. The curious thing in this disease is, that it often takes one village, and then passing over another, takes one on the other side of it; but at the same time it often happens that the village which in the first year escaped the attack gets it the second, whilst the two attacked in the previous year escape the second attack. We have not had an attack anything nearly as bad as the present one since the year 1848, but the country has never been entirely free from it; since that year it has always been making its appearance to a slight degree in one part of the country or the other. The disease does not always show itself in the same malignant type; sometimes it is mild, whilst at other times it is most virulent; for example, sometimes only half of them attacked die, whilst at others it is quite the exception, when one of those attacked escape. I think the disease is equally fatal to both cows and buffaloes, and cannot say that condition has anything to do with it, with the exception that an animal in good condition is likely to be able to fight longer against the disease than a lean animal; the same with regard to age. When the English first took the country, the price of a cow was from Rs. 2 to 3, now from Rs. 16 to 20. I do not attribute this to the disease among cattle; if it were so, that would not account for everything else having got dear in a like proportion. The reason of it is this, that at the time of the Assam Government the Rajahs were always in want of money, and there was very little in the country; since the English have taken the country, the money has been pouring in from Calcutta to such an extent, that everything has got dear with the exception of money, which now is the only thing that is cheap.

Cattle diseases. History. Contagiousness. Progress of disease. History. Spread of disease. Type varies. Liability. Price.

DISTRICTS OF SEEBSAUGOR AND LUCKIMPORE.

From LIEUTENANT COLONEL WILLIAM AGNEW, *Officiating Commissioner of Assam, to the Secretary to the Government of Bengal, General Department,—(No. 154, dated Gowhatty, the 18th May 1869).* Lieut.Col. W. Agnew.

I have the honor to forward, for the information of Government, the accompanying copies of communications* and enclosures† from the Deputy Commissioners of Seebsaugor and Luckimpore, reporting that cattle murrain has broken out and is causing very serious ravages in the Golaghat and North Luckimpore Sub-divisions. The disease, I regret to say, has committed great havoc amongst the cattle in the District of Nowgong also, and on the 7th ultimo I ordered the District Superintendent of Police to visit the parts of the district where it was said to be most prevalent and report the result of his observations; but he fell ill and no report has been received from him yet. Last year the disease was epidemic in Kamroop and the Khasi Hills, and it seems gradually to have spread to Central and Upper Assam. I shall keep Government fully informed of the progress of the disease. Course.

* Luckimpore, No. 59c, dated 13th May 1869.

† Seebsaugor, No. 270, dated 13th May 69.

LUCKIMPORE. John Campbell, Esq.

From JOHN CAMPBELL, Esq., *Extra Assistant Commissioner, North Luckimpore, to the Deputy Commissioner, Luckimpore,—(No. 23, dated North Luckimpore, the 10th May 1869).*

I have the honor to inform you that since my leaving the station on the 18th of last month for camp, a murrain has been destroying the cattle in great numbers near Luckimpore. The murrain has been very prevalent in the sub-division this cold weather, commencing at the eastern extremity, near Dhokooa Khannah, and then (leaving the part adjacent to Luckimpore almost untouched) appearing at the extreme west, near the Dikrong, about the 20th of March, a day or two after I had left that locality. It has now re-appeared with fresh violence near Luckimpore.

Season.

2. I have prohibited the removal of (apparently) healthy cattle from one village to another, on the appearance of the disease in the first, which seems to have been the practice here. I some time ago circulated a Bengalee translation of Dr. Kenneth McLeod's pamphlet on the treatment of cattle disease to the Mouzadars, whom I directed to explain it to the villagers. They are, however, a very inferior class of people, and I should not be surprised if they have done nothing in the matter, to which conclusion I am the more led by the fact that I have been generally left to find out the existence of a cattle disease as best I might by the Mouzadars.

3. So great has been the mortality, that I regret to have to report that I anticipate a deficiency in the amount of the summer crop. I shall keep myself informed as to the correctness of this conclusion and report such information as I may receive.

Capt. J. Gregory.

Memo. by CAPTAIN JOHN GREGORY, *Deputy Commissioner, Luckimpore,—(No. 59c, dated the 13th May 1869).*

Encloses copy of a report from the Extra Assistant Commissioner, Luckimpore, and with reference thereto adds that while travelling from Golaghat to Nigri Ting, he noticed a number of dead cattle by the road side, and on inquiry was informed that an epidemic, supposed to have been introduced by the importation of Bengalee buffaloes, was raging amongst horned beasts.

SEEBSAUGOR. Capt. A. E. Campbell.

From CAPTAIN A. E. CAMPBELL, *Deputy Commissioner, Seebsaugor, to the Personal Assistant to the Commissioner of Assam,—(No. 270, dated Seebsaugor, the 13th May 1869).*

I have the honor to forward you a report from the Assistant Commissioner, Golaghat, regarding a disease that has broken out among the cattle in that sub-division.

2. I have called on Lieutenant Blathwayt for further explanation and referred him to Dr. Kenneth McLeod's report on the cattle plague in Lower Bengal, 15 copies of which were sent him for distribution on the 29th April last. I have also ordered the Mouzahdars to report at once whether the disease is spreading to this portion of the district, as no such intimation has yet reached me.

GOLAGHAT. Lieut. L. Blathwayt.

From LIEUTENANT L. BLATHWAYT, *Assistant Commissioner, Golaghat, to the Deputy Commissioner of Seebsaugor,—(No. 92, dated Golaghat, the 11th May 1869).*

Mortality.

I regret to have to report that cattle disease has broken out in several mouzahs of this sub-division, and that within the last eight or ten days several hundred head, including both cows and buffaloes, have died.

I should have reported the matter sooner, had I been fully aware how serious the outbreak was; but the Mouzahdars towards Nigri Ting made no report, and the first intimation I received that there was anything in excess of the ordinary mortality was by seeing the carcasses of the cattle when going through the district. I have called on the Mouzahdars for a full report, which however I have not as yet received, with the exception of one from the Mouzahdar of Kachareehaut, who states that fifteen buffaloes and fifty cows and bullocks have died in the last few days.

The disease has just made its appearance in the station of Golaghat, where a few cattle have died.

The disease appears to attack the weak and the strong quite indiscriminately; it commences with a running of water from the eyes and a refusal of food, then diarrhœa and sometimes dysentery sets in, and in from three to ten days the animal dies.

I shall feel obliged if you can give me any information as to the supposed best method of treatment.

I believe that when the disease first appeared in Assam, directions as to its treatment were issued to the Police; but I can find no record in this office.

As soon as I obtain information from the Mouzahdars, I will submit a fuller report upon the subject.

ASSAM.

From Lieutenant Colonel W. AGNEW, *Officiating Commissioner of Assam, to the Secretary to the Government of Bengal, Judicial Department,*—(*No.* 195, *dated Gowhatty, the* 18*th June* 1869). Lieutenant. Colonel W. Agnew.

In reply to your letter No. 585, dated 28th ultimo, desiring me to report the symptoms and characteristics of the cattle murrain which has broken out in various parts of this division, I have the honor to state as follows.

2. The disease appears to be identical with that which raged in the same season last year in the District of Kamroop, and the symptoms of which are well and elaborately described by Dr. Purves in a report to the Commissioner of Assam, published in the Supplement to the *Calcutta Gazette* of the 14th October last, to which I beg to refer you. I add, however, for further information, the descriptions given by some other officers who have had opportunities of examining infected animals.

3. Lieutenant Blathwayt, Assistant Commissioner of Golaghat, states,—"The disease appears to attack the weak and the strong quite indiscriminately; it commences with a running of water from the eyes and a refusal of food, then diarrhœa and sometimes dysentery sets in, and in from three to ten days the animal dies." It appears to be a virulent form of *gootee.* Golaghat. Condition. Duration.

4. Mr. Coombs, District Superintendent of Police, Seebsaugor, writes,—"The natives call it (the disease) cholera, but more apparently from its appearing simultaneously with that disease in the district than from any symptoms of the disease as it occurs in man. It apparently first shows itself in a swelling of the throat accompanied by copious discharge from the eyes. This is followed by violent purging for two or three hours, and the animals being unable to eat or swallow die in two or three days. In some cases the purging comes on first, but the symptoms are otherwise the same. It appears to me worthy of notice that this sickness is nearly identical with that noticed by a Mr. H. James Raincy in a letter dated 18th April to the Agricultural and Horticultural Society of India, and read in the monthly meeting of that body on the 21st April 1869. It is there called *panchunee,* and is said to be raging with great violence in Lower Bengal." Seebsaugor. Epidemic and epizootic. Duration.

5. The same officer in a subsequent letter states,—"The attack is sometimes sudden, but is generally preceded for two days by cough, discharge of water from the eyes, drooping of the ears, or swelling of the throat. The skin emits a bad smell and the hair stands up, and flies also settle largely upon the face and breed worms. These flies are not of the common sort; the tongue in some cases is swollen and covered with sores, but in others not. The appetite in some gone, but others appear unable to eat from the sores on the tongue. The disease is contagious, and only 16 to 20 per cent. of those attacked recover. The first sign of recovery is a diminution in the number of flies which annoy the animal. Inspection. Mortality.

6. Dr. R. O'Connor, Civil Surgeon of Nowgong, thus describes the disease (he is commenting on the bad effects of permitting the carcasses of deceased cattle to remain without burial),—"The animals are seized in the first instance with enteric fever, on which they fly to the water holes and tanks or bheels, and drink largely of the water impregnated with effete animal matter, and in a few days a typhoid form of the disease comes on, ending in passive hæmorrhage from the nose and passing by anus of dark-colored blood, after which the animal speedily dies. Nowgong. Thirst.

7. Lieutenant Phillips, Assistant Commissioner of Nowgong, describes the disease as a form of *mour* reported on by Dr. Purves, as quoted above; but adds that the intense longing for water noticed by Dr. Purves did not come under his observation at Nowgong. Nowgong.

8. With reference to the 2nd paragraph of your letter, I beg leave to say that the necessary orders were issued prior to the receipt of your letter.

9. In compliance with the instructions conveyed in your 3rd paragraph, I propose furnishing fortnightly reports of the progress of the disease for the Lieutenant Governor's information. The latest intelligence I have on the subject from the different districts is given below.

Kamroop, 29th May.—The Deputy Commissioner says,—"Cattle disease has appeared in some of the mouzahs of the district, but not to any great extent. I have, however, called for further information." The Assistant Commissioner of Burpettah Sub-division states,—"Although some mortality among cattle has taken place, nothing approaching the mildest form of a murrain has as yet made its appearance." Kamroop. Burpettah.

Durrung, 27th May.—The Deputy Commissioner writes,—"From reports received from the several Mouzahdars, it appears that 26,740 cattle (buffaloes and cows) died in the district during the last five months up to this time, out of which 15,285 died in the Chadooai and Nowdooar Mehals and the Orang Mouzah of Chardooi, where cattle murrain has been particularly prevalent. The disease is now abating in Chadooai Mehal." Durrung. Mortality.

Nowgong.—Agreeably to orders given by me on the 7th of April, the District Superintendent of Police was deputed to visit the affected part of the district, to inquire fully into the whole question and report upon it. Nowgong.

SEEBSAUGOR. *Seebsaugor, 4th June.*—In this district the disease appears to be chiefly confined to the Sub-division of Golaghat, where it has committed great havoc; I regret to say it is now reported as spreading to the mouzahs in the vicinity of Jorehaut, and will no doubt continue to proceed eastward. I append copies of letters (the last received) from the Assistant Commissioner* in charge of Golaghat and the Deputy Commissioner† of Seebsaugor.

* No. 109, dated 30th May 1869, and enclosures.

† No. 246, dated 14th June 1869, and enclosures.

Luckimpore. *Luckimpore.*—Nothing has been heard from this district lately on the subject; but I have reason to believe the disease has not yet appeared on the south bank of the river.

SEEBSAUGOR. *From* CAPTAIN A. E. CAMPBELL, *Deputy Commissioner, Seebsaugor, to the Personal Assistant to the Commissioner of Assam,*—(*No.* 246, *dated Seebsaugor, the 4th June* 1869).

Capt. A. E. Campbell.

I have the honor, with reference to your No. 700, dated 19th ultimo, to forward copy of a report received from the Assistant Commissioner, Golaghat, on the cattle disease in that portion of the district, together with statement showing the number of deaths reported.

Although the disease is apparently so bad in and around Golaghat, I am happy to say it has not as yet made its appearance here. I annex a statement of deaths reported in mouzahs near Jorehaut.

With reference to the Assistant Commissioner's report, I have directed him to depute one of the Amlah to the mouzahs where the disease is worse, to obtain accurate information regarding the loss supposed to be likely to ensue to the ryots.

GOLAGHAT. *From* LIEUTENANT L. BLATHWAYT, *Assistant Commissioner of Golaghat, to the Deputy Commissioner of Seebsaugor,*—(*No.* 109, *dated Golaghat,* 30*th May* 1869).

Lieut. Blathwayt.

In continuation of my letter No. 101, dated 22nd May, I have the honor to report that the cattle disease in this sub-division is still spreading, as you will perceive from the annexed tabular statement, as compared with the one I submitted on the 22nd.

Loss. Uncultivated land. 2. I have very serious apprehensions that the ryots in Mouzahs Dergaon, Messamora, Rajabahar, Namdyang, and Nahoronee will leave a considerable portion of their land uncultivated this year, owing to the want of animals to plough it.

3. It is not an easy matter to decide whether, as regards any particular portion of the sub-division, the disease has increased or diminished, for, suppose in a certain mouzah there are a thousand cattle, and during the first month five hundred die, and during the second month three hundred die, the disease which at first sight would appear to have ceased would in reality have become much worse. To form an opinion with any certainty, it would be necessary to know the number of cattle in the place previous to the outbreak of the disease.

There is one point, however, which looks hopeful, *viz.*, that in the places where it has last appeared, the mortality is slight compared with that which took place in mouzahs where the disease first showed itself.

4. In my last letter on the subject, I mentioned that I was about to commence treating a few sick animals according to Dr. McLeod's method, but I am sorry to add that hitherto I have been unable to carry out this idea in the way I wished. I set apart a building as a kind of hospital, purchased some of the more simple medicines, engaged two men to assist me,

Opposition. and then met with a steady passive opposition on the part of the Assamese, not one of whom would send me their sick cows for treatment, and consequently the only cases I could get were two bullocks belonging to the Department Public Works, both of which appear to be quite recovered after a slight attack, and one or two stray cows in the last stages of the disease, on whom no medicines could be expected to act as a cure. In the case of the former, I should hardly have believed that they were diseased at all, were it not that they were in the same stall with an animal since dead, eating the same grass and drinking out of the same pans. Only one other case of recovery has come under my personal observation (though I have heard of several), *viz.*, a bullock belonging to a native which had been fed on grain; and although at one time to all appearance in a dying state, is now quite well again. From these three cases I am inclined to believe that the previous style of food and condition of the animal have a good deal to do with its chance of recovery if attacked.

Goats. 5. Three or four instances of goats dying of the disease have been reported to me, but I am not at all certain of its identity with that which attacks cows and buffaloes, the symptoms, so far as I have yet learnt, being different. Hitherto I have heard of no instances of any other animals, either wild or domestic, being attacked.

Uncultivated land. 6. As an instance showing the virulence of the disease, I may mention the case of a Clerk in my office. He possessed some bullocks, cows and calves, twenty in all, and ten days ago the disease appeared among them. After two days one died, and on the third day a

GOLAGHAT.

second died. Yesterday five died, and this morning two more are dead and five others sick. This man owns seven *poorahs* of land, and has now only one bullock left, and consequently his land must remain uncultivated this year, unless he is able to purchase fresh bullocks, which is not very probable; and I fear that hundreds of others may find themselves no better off than he is.

SEEBSAUGOR.
H. A. Coombs Esq.

From H. A. COOMBS, Esq., *District Superintendent of Police, to the Deputy Commissioner, Seebsaugor,—dated 22nd June* 1869.

In compliance with his memo. No. 192, dated 25th May 1869, has the honor to inform that the Inspector of Golaghat reports that the cattle disease in that jurisdiction has slightly decreased.

2. The Officer in charge of Jorehaut Station reports that the disease has reached his jurisdiction and is rapidly on the increase.

3. There are no cases as yet in Seebsaugor or Burtolah Sub-division.

Tabular Statement, No. 2, showing the mortality from cattle disease in Sub-division Golaghat.

NAME OF MOUZAH.	Date on which disease first appeared.	Total mortality—	Of cows.	Of buffaloes.	Up to what date reported.	Whether disease has increased or diminished.	REMARKS.
Borgobain Chapporee ...	March...	359	320	39	May, 22nd	About the same.	
Dergoon Missamora Rajabehar	1st April...	3,000	Not stated.	Not stated.	„ 25th	Increased.	
Namdayong ...	28th „ ...	760	626	134	„ 24th	About the same.	
Goorjoogonia ...	1st May ...	400	300	100	„ 15th	Not known.	No report received since 15th.
Nabaronee ...	4th „ ...	1,300	Not stated.	Not stated.	„ 25th	„	
Kakodouza ...	8th „ ...	184	163	21	„ 21st	„	No report since 21st.
Kacbareehaut ...	9th „ ...	74	56	18	„ 16th	„	Do. do. 16th
Tirooal	13th „ ...	15	15	...	„ 15th	„	Do. do. 15th.
Nikboree Chapporee ...	14th „ ...	2	...	2	„ 16th	Increased.	Do. do. 16th
Dekecal	15th „ ...	2	2	...	„ 17th	„	Do. do. 17th.
Morungeepar ...	15th „ ...	233	177	56	„ 28th	„	
Dockbinhengra ...	16th „ ...	400	Not stated.	Not stated.	„ 28th	„	
Golaghat	16th „ ...	41	33	8	„ 27th	Not broken out at the time of compiling last report.	
Gamoogooree ...	18th „ ...	55	40	15	„ „	Ditto	ditto.
Ghilladharee ...	Since 20th...	10	4	6	„ „	Ditto	ditto.
Koosoogaon ...	„ „ ...	4	4	...	„ „	Ditto	ditto.
Monequa	„ „ ...	6	5	1	„ 28th	Ditto	ditto.
Atgaon	„ „ ...	3	2	1	„ „	Ditto	ditto.
Bhomgaon	„ „ ...	33	16	17	„ „	Ditto	ditto.
Betteonee	„ „ ...	2	1	1	„ „	Ditto	ditto.

L. BLATHWAYT, *Lieut.*,
Assistant Commissioner.

The 30th May 1869.

Tabular Statements, No. 2, showing the mortality from cattle disease in the District of Seebsaugor, not in the Sub-division of Golaghat.

NAME OF MOUZAH.	Date on which disease first appeared.	Total mortality—	Of Cows.	Of Buffaloes.	Up to what date reported.	Whether disease has increased or diminished.	REMARKS.
Bebejeah ...	...	Not stated	Not stated	Not stated	23rd May 1869	About the same.	
Pooronee Mutty ...	...	150	...	150	31st ditto ...	Ditto.	
Soongi Hoondie ...	...	8	3	5	24th ditto ...	Increased.	
Goroomoor ...	...	Not stated	Not stated	Not stated	27th ditto ...	About the same.	
Sarai Babee ...	...	3	...	3	25th ditto ...	Not stated.	
Kasogorah ...	...	200	Not stated	Not stated	23rd ditto ...	Increased.	
Khungiah ...	...	40	Do.	Do.	24th ditto ...	Ditto.	
Rungdoy ...	...	28	16	12	31st ditto ...	About the same.	

ZILLA SEEBSAUGOR;
DEPUTY COMMISSIONER'S OFFICE,
The 4th June 1869.

A. E. CAMPBELL, *Capt.*,
Deputy Commissioner.

SEEBSAUGOR.

DISTRICT OF SEEBSAUGOR.

Capt. A. E. Campbell. *From Captain* A. E. CAMPBELL, *Deputy Commissioner, Seebsaugor, to the President of the Commission directed to inquire into Cattle Disease,—(No. 4, dated Seebsaugor, the 3rd January* 1870*).*

In accordance with instructions contained in letter No. 2777, dated 11th December, from the Junior Secretary to the Government of Bengal, to the Commissioner of Assam, I have the honor to forward answers to the questions contained in your letter No. 100, dated 6th ultimo, as far as I am able.

2. The number of cattle attacked, those which have recovered, and those that are still ill, it is impossible to determine. The returns only show those that have died.

3. The disease has now been raging in the district since the end of March last, and although it appears to have decreased in virulence, there are still a large number of victims.

The disease is at present mostly in the mouzahs around Seebsaugor itself.

Answers to questions in Form No. 4.

1.—District of Seebsaugor, Upper Assam. 2.—The disease is called murrain. 3.—Appeared 30th March 1869. 4 and 5.—112,415 cattle died. 6, 7, 8, and 9.—The disease is infectious. 10.—It is supposed to have originated from the importation of some buffaloes. 11.—Symptoms: coat staring, no eruption, eyes and mouth water, body hot, laboured breathing and cough, shivering fits, swelling of the throat, fæcal evacuations watery. 12.—Duration of attack, from 3 to 5 days. 13.—Treatment: notices have been issued throughout the district to separate the diseased animals from those not infected, also for the immediate burial of the carcasses, and for cattle not to be allowed to roam, or to be taken from one mouzah to another. In the station an hospital has been erected to which sick cattle are taken.

LUCKIMPORE.

DISTRICT OF LUCKIMPORE.

John Campbell, Esq. *From* JOHN CAMPBELL, Esq., *Extra Assistant Commissioner, Luckimpore, to the Deputy Commissioner, Debrooghur,—(No.* 80, *dated Luckimpore, the 4th September* 1869).

Date of outbreak

I have the honor to submit the report called for in your letter No. 207 M of the 4th June, and your memo. No. 400 of the 2nd instant, on the cattle disease which has since April last been causing such havoc in this sub-division.

2. The symptoms of the disease have been personally noted by me, and I have also consulted intelligent natives on the subject. The result of my inquiry is, that I believe the

Contagiousness. disease to be highly contagious, and that its great spread is owing to the ignorance and apathy shown by the natives in allowing their cattle to wander about, without taking any precautions against contact with diseased animals. This was particularly the case at first; but

Separation even after warnings from the Police and Mouzadars, it took the people a long time to recognize the fact that it was for their interest to keep their animals separate as far as possible.

Symptoms

3. The first sign of disease apparent is a mucous discharge from the nostrils and eyes. This is accompanied by a short hacking cough. The ears, moreover, are lowered and remain in an unnatural position.

4. The diseased animal usually continues feeding and moving about for two or three days. Many animals, however, do not live so long, some being carried off the first day; but I allude only to the majority of cases where the animal lives from seven to nine days after the appearance of the discharge alluded to.

5. A peculiar symptom is a great longing to drink cold water; a longing which, if indulged, often proves speedily fatal.

6. The gums swell and become sore, so that from the third day the animal gradually discontinues grazing. About the fourth or fifth day it ceases taking any nourishment. The stomach becomes distended and the animal generally becomes a victim to severe dysentery. It can no longer stand, and shortly after dies.

Treatment. 7. I have only heard of one or two cures, and do not think there were many more. One so-called method of cure was to keep the diseased animals close shut up in a small house with fires inside. They had dry grass supplied them and were allowed to drink warm rice-water or plain water. This I have on good authority, but of course even two or three such cures are not conclusive as to the proper treatment of the disease, and not being based on any known data as to the nature of the disease, it must be regarded as purely accidental.

Lor animals 8. That the disease is highly contagious, there can be no doubt. It has affected not only cattle, but on the one hand, pigs and dogs, and on the other hand, tigers, deer, wild buffaloes and other wild animals.

LUCKIMPORE.

9. The disease made its first appearance near the Dikrang, in the Narainpore and Bangfang Mouzahs, about the beginning of April last. About the beginning of March, a batch of Bengalee buffaloes passed through, and one died close to my camp on the bank of the Dikrang; some days after its death I came into camp and remained there till about the 22nd March, up to which time there was no sign of disease of any kind. Buffaloes.

10. The Bengalee buffaloes were transferred from Bangfang Mouzah to the Majoli; from the Majoli the disease returned to the north bank.

11. It appeared here first at Khakatiago, a village in Betteri Mouzah, about the 15th May. From thence it spread through the Telahi Mouzah, and crossing the Rungameddy, began to spread in Nowboysha Mouzah. It had settled itself in both Mouzahs before the end of May. Course of disease.

12. Through Telahi Mouzah, leaving Comlabariah Mouzah untouched on the left, it spread into the Goraza and Luckimpore Mouzahs in the beginning of June. No cattle died in Comlabariah Mouzah till the beginning of July.

13. Thence it spread in June into the Chootiakari and Kodom Mouzahs, again leaving the Nowkari Mouzah exempt till the beginning of July.

14. The parts of the sub-division untouched by the disease are— Exempted localities.

1*st.*—Mouzah Lalook Dolonee.
2*nd.*—The Bhoroloowa Khund of Mouzah Nowboysha.
3*rd.*—Gagoldoobi and Pothalipain Khund of Kodom Mouzah.
4*th.*—Mouzahs Dhowknoakakhan, Bor Doloni and Gohaingao.

The last escaped by having the Subansiri and 10 miles of jungle between them and the infected spots.

15. Mouzah Lalook Dolonee is between Bangfang and Nowboysha, and might be supposed very likely to be attacked. Communication is, however, very deficient, which accounts for its exemption, as also for that of Pothalipain and Gagoldoobi. Cause of exemption.

16. The exemption of Bhoroloowah I can only attribute to the precaution taken by the natives under the advice of a very influential and popular Manager of a tea garden, Mr. Stewart, of Doolahat Factory.

17. I have expressed my opinion that the disease is contagious, but I have been informed of one case in which the disease appeared under circumstances which quite precluded its being attributed to any ordinary form of contagion. The case was that of a Nuri village on the Subansiri, with which the only means of communication was by boat. The disease broke out suddenly, and was attributed to the presence of a stranger who had gone through the village on his way from Luckimpore to Burdolone. If it was so communicated, the circumstance only shows more clearly the dangerous character and highly-contagious nature of the disease, since it can be communicated from beast to beast through man. This is apparently the only way in which it can be accounted for, except on the theory of spontaniety. Isolated outbreak. Importation by man.

18. I have the honor to file herewith a list of Mouzahs with the numbers of dead and living cattle, as supplied by the Mouzahdars, up to the 20th August.

19. I have delayed sending in this report, as I did not suppose it was required before the complete cessation of deaths by the disease. A few cattle are still dying in two or three Mouzahs.

Name of Mouzah.	Number of dead cows.	Number of living cows.	Number of dead buffaloes.	Number of living buffaloes.	Remarks.
Narainpore	2,746	978	359	48	
Bangfang	631	287	41	192	
Nowboysha	521	2,150	588	257	Includes 709 cows &c., and 117 buffaloes in Bhowloowa untouched.
Kumbaboria	668	472	67	5	
Gorahoga	1,750	627	229	11	
Nowkari	1,514	871	97	97	
Chootiyakari	531	422	236	30	
Luckimpore	560	352	90	13	
Kodom	1,109	1,461	518	83	Includes live cattle in Pothalipain and Gagoldoobi Khunds untouched by disease.
Telahi	1,575	1,069	145	23	
Betteri	525	255	52	6	
Total ...	11,162	8,799	2,427	765	

LUCKIMPORE. John Campbell, Esq. *From* JOHN CAMPBELL, Esq., *Extra Assistant Commissioner, Luckimpore, to the President, Cattle Plague Commission, Calcutta,—(No. 22, dated Luckimpore, the 22nd March* 1870).

With reference to your No. 152 of 15th ultimo, I have the honor to inform you that you are under a misapprehension as to the first locality attacked by the cattle plague, caused, I am sorry to say, partly by the vagueness of my letter of the 18th May last. The disease which appeared in Dhowkhoa Khana in the cold weather of 1868-69 was not of the nature of the plague which broke out in April 1869, but was the ordinary *sobokar* (as it is called here) or *khoorah*, which almost of necessity (apparently, the recurrences being so regular) breaks out every cold weather throughout the province.

Foot and mouth disease.

Plague.

2. The plague first broke out in Narainpore Mouzah, on the western boundary of the district, in April last. I have the honor to forward a copy of my report on it, dated the 14th September last, wherein you will find a full account of the spread of the disease.

3. The cattle plague undoubtedly occurred from the first source mentioned in your letter, *viz.*, "introduction from another district." It appeared in Mouzah Kolabari (of the Durrung District) prior to its appearance on this side of the boundary in Narainpore Mouzah. It was probably caused there also by the passing through of the fatal batch of buffaloes.

Importation of buffaloes.

History.

4. I regret to state I have no records from which I could give any information as to former outbreaks. From conversation I gather that this disease has never before appeared here within the memory of the oldest inhabitant.

5. The *sobokar benear* or *khoorah* was pretty general throughout the sub-division in the cold weather. It arises from local causes—rank vegetation and weakness of the animals.

6. It will be noticed that the Dhowkhoa Khana Mouzah was not touched by the cattle plague, the information received by you (other than that supplied by my letter) was therefore incorrect.

John Campbell, Esq. *Information supplied by* JOHN CAMPBELL, Esq., *Extra Assistant Commissioner,—(dated Luckimpore, the 26th March* 1870).

Locality.

The Sub-division of North Luckimpore comprises :—

	Acres.
Infected portion, about	550,000
Uninfected portion, about	220,000
TOTAL ...	770,000

The soil is alluvial and thin; there are numerous small streams; the country is low, the greater portion under dense grass and tree jungle; it is to a great extent under water in the rains, all the streams overflowing.

Number of cattle.

The number of cattle in the sub-division is as follows :—

	Cattle.	Buffaloes.	Total.	No. to sq. mile.
Infected tract	19 971	3,192	23,163	27
Uninfected tract	85,000	2,000	10,500	30-5
TOTAL ...	8,500	5,192	33,663	28

There are no varieties of breeds worth mention.

Value.

The value of cattle is as follows :—

	Cattle.			Buffaloes.	
	Bull.	Cow.	Bullock.	Male.	Female.
Value—now	Rs. 9	7	16	40	100
„ before plague	„ 5	5	9	20	70
„ ten years ago	„ 4	3	5	12	30

Uses of cattle.

The uses for which cattle are employed are :—

1.—*Agriculture.*

Cattle.—A few cows are used by the Mussulmans; these are generally barren cows; bullocks, generally speaking, only used.

Buffaloes.—Both bulls and cows used.

2.—*Dairy.*

Cows and cow buffaloes are used.

Cattle are not properly treated; cattle-sheds when used are mere open sheds, hardly preserving the animals from exposure by night, while by day they remain out-of-doors in all weathers They are never cleaned or rubbed down after a soaking. The animals are certainly not too

hardly worked (except during the rains, which is unfortunately the very time they should be exempted, in consequence of the want of proper pasture). The variation in the temperature must be felt, as no arrangements are made for protection against cold.

Buffaloes are not stalled or kept in sheds; they pass the night in filthy puddles, wherever they may be, without any covering.

The usual season for working cattle is the rains, that is for the *sali* crop. The natives are beginning to cultivate more *ahous*, for which of course they use their cattle; but the number employed in the latter cultivation is considerably less than in the former.

The proportion used for agricultural and dairy purposes is not accurately ascertainable. Female buffaloes are generally used for the dairy.

Housing. Cattle are housed in an open shed of bamboos and thatch, the animals being tied to the posts inside.

Buffaloes are tied to stakes during the night near the owner's house, or, if they are at a distant pasture, near the herdsman's house. Their resting places are very filthy (ordure being allowed to accumulate), and after rain become perfect quagmires.

Feeding and watering. Cattle are simply turned out to graze and water themselves every morning. Even at the height of the late plague, very few people took the trouble to carry out that most ordinary precaution against contagion, of feeding and watering the animals themselves. In the rains there is some difficulty about grazing, as the greater portion of the country is either inundated or under rice, or both. No attempts are made, however, to obviate the semi-starvation which is invariably the result. In the cold weather the *dolonees* (large grass plains, low-lying) and the *pittars* (rice-fields) offer ample pasture.

Buffaloes in the rains are taken to high lands or *chupporees* in or near the larger rivers, being fed nearer their owners on the *dolonees* in the cold weather.

In some places it is very difficult in the cold weather to get water, the sandy soil not permitting the sinking of wells, and the tanks and streams drying up.

Herding. Both cattle and buffaloes are herded at all seasons by day, the animals of a whole village, or even of two or three villages, being turned out together to graze. At night each householder has his cattle housed or tied up near his own dwelling. But buffaloes on the *chupporee* in the rains are herded night and day.

Cattle are generally herded and grazed in the vicinity of their owner's dwelling. Buffaloes are removed to a distance in the rains to the high lands and *chupporees*, but in no case, I think, beyond the limits of the district: it is not necessary to do so.

General condition. At the end of the cold weather cattle are in good condition and strong, but through the scarcity of grazing ground in the rains, from June to October, and their being severely worked and exposed to many hardships at this period, before the beginning of the cold weather, the great majority present a most miserable appearance.

Stock how kept up. The stock is kept up by breeding. The bulls used are very young, much too young for the purpose, the custom being to castrate them at a time when they should only be beginning breeding. The consequences are obvious. The bulls are in no way selected for the purpose.

Importation. There is ordinarily no importation of either cattle or buffaloes. The batch of buffaloes imported with such grave results last March was an exception. There has been no importation for years. About 20 of this batch were sold in the sub-division at prices varying from Rs. 16 to 30. They were all females, and I understand all succumbed to the plague. This method is unfortunately only another way of spreading disease, as appeared in several cases last year.

Buying and selling. There is no particular season for dealings in cattle, though they are generally carried out in the cold weather. There are no fairs. A man wishing to purchase cattle goes about looking for animals to his taste.

There is no exportation worth mention.

Hide trade. There are no *Chamars* or dealers in hides. Hides have no price, since there is neither exportation nor local demand. The animals are never skinned.

Mortality. There are no statistics of ordinary mortality, even of that caused by the regular cold weather "foot and mouth" disease, or *sobokar* as it is locally termed.

History of plagues. There are no records from which any information as regards the history of plagues can be obtained, and the slight information derivable from natives is valueless. Whatever the plague, however, that appeared last year may be, it is generally alleged that no disease of that description has appeared in the sub-division within the knowledge or memory of any person now living. I put some credit in this, as several intelligent persons who have had opportunities of observing and remarking any unusual disease concur in making this statement.

LUCKIMPORE.
John Campbell, Esq.
Sobokar or khoorah.

The most ordinary form of disease is what is called here *sobokar*, which is, I imagine, precisely the same as the disease called *khoorah* in Bengal, the symptoms being similar. Ulcers form in the feet and mouth; lameness is the result, with inability to eat or ruminate. Many animals are saved.

Causes.

The causes predisposing to this disease are probably,—1*st*, the wretched condition of the animals at the end of the rains; and 2*nd*, climatic influences tending to weaken their condition. It is attributed—and no doubt correctly—to the rank vegetation on which the animals almost perforce graze just after the settling down of the floods at the end of the rains, and later on to the want of pure water, necessitating resort to most filthy puddles.

It probably is attained both spontaneously and by contagion, the discharges of the suffering animals being highly contagious.

Season.

This disease, *sobokar*, occurs in the cold weather from October to February.

Both drought and scarcity of food affect the disease, the latter especially. I have noted this before. I know of no other form of disease.

The *sobokar* lasts more or less virulently from the beginning of October to the end of February. In the cold season of 1868-69 the disease was most virulent in the parts afterwards left untouched by the cattle plague. In the parts affected by the cattle plague, the *sobokar* had been very mild, assuming almost a sporadic form.

Statistics.

The following remarks apply to the cattle plague lately prevalent, not to any other forms of disease, of the mortality caused by which there are indeed no statistics :—

Attacked.

(*a*). 41 per cent. throughout the sub-division were attacked.

Recoveries.

(*b*). There are no statistics of recoveries. It was difficult enough to get in the little information required correctly.

Deaths.

(*c*). Deaths were probably about 98 per cent. I hardly think more than 2 per cent. *of those attacked* recovered.

Not attacked.

(*d*). 59 per cent. throughout the sub-division escaped.

Liability of different breeds, &c., to disease.

Age and sex do not seem to have affected the liability to disease in any way.

As regards condition, I am unable to offer an opinion. No inquiries on the point were made at the time, and it is now impossible to obtain reliable information.

Symptoms.

There were usually three stages of the disease, lasting from six to nine days altogether. Many animals of course did not live so long as six, and many lived longer than nine days.

1*st stage*.—Symptoms (2 or 3 days).

1.—Dulness or restlessness.
2.—Slight appetite, deficient rumination.
3.—Skin hot and rough.
4.—Ears drooped.
5.—Slight cough.
6.—Slight discharge from eyes and nostrils.

2*nd stage*.—Symptoms (2 or 3 days).

1.—Skin very hot; fever.
2.—Hair erected.
3.—Breathing hard and severe cough.
4.—Increased discharge from eyes, mouth, and nostrils.
5.—Tongue and throat swelled.
6.—Great thirst.
7.—Refusal of food; suspended rumination.
8.—Distention of stomach and loose stools.
9.—Suspended milk.

3*rd stage*.—Symptoms (2 or 3 days).

(1).—Skin gradually cooling; finally cold.
(2).—Ulcers (sometimes).
(3).—Increase of looseness of stools; watery, yellow and fœtid, with blood sometimes.
(4).—Cow no longer attempts to stand up.

No *post-mortem* examination was made by me.

Infectiousness.

The gradual and systematic spread of the cattle plague last year, and the exemption of several parts of the sub-division, show that it did not arise from local causes. Every *advance* of the plague was traced to the influence of contagion. No experiments were, I regret to say, tried.

Treatment.

There was no medical treatment employed by Government officials. Cures are talked of, but as they were not based on any knowledge of the disease, they may be, such as they were, regarded as purely accidental, or rather, perhaps, Nature was the doctor.

Sanitary measesur.

Isolation was attempted, orders being issued to prohibit the transfer of cattle from infected and healthy localities. In several instances these orders were most deliberately, though uselessly, disobeyed by selfish people. Several men were punished, but it appeared that the orders were illegal, and these men were released on appeal.

LUCKIMPORE.
John Campbell, Esq.

Separation of the sick and healthy was not attempted, except by a few persons, on persuasion.

Orders (apparently illegal) were issued for the burial of all carcasses, but were of course neglected, one small stream being rendered unbearable by the number of carcasses thrown into it (close to the station), in spite of all the efforts of the Police to ensure burial.

There being no sale of hides, horns, or hoofs, they are buried with the carcasses, or thrown away with them. Domestic and wild animals of all kinds were affected by the cattle plague; even fowls and ducks were stated to have died of it, though no cases of this nature came under my notice. Infection of other animals.

No cases occurred, to my knowledge, of men being affected by the disease. Infection of man.

A singular case occurred in a Nuri village situated on the Subansiri, where it is perfectly isolated. No cattle were brought into it or any other animal, yet the plague broke out among the few cattle there. It was attributed first to a stranger in the village, and then to the contact of the oars of some of the villagers with carcasses of diseased cattle in a small river some distance off. I cannot believe in the outbreak being unassisted by contagion; but whichever of the explanations offered is taken, it seems incredible that it did so take place.

There was no epidemic prevailing during the period the cattle plague was raging. There had been none for two years before, and there has been none since.

There were no meteorological observations made, but as the effect (if any) produced by changes of weather was not noticed, it is probable there was not much variety. Weather.

S. Campbell, Esq.

Information supplied by S. CAMPBELL, Esq., *Tea Planter, Burpettah, North Luckimpore,— dated 26th January* 1870.

The following information applies to the sub-divisional station of North Luckimpore, the area of which is about 1,500 square miles, and is bounded on the east by the Dholl river and Ranee bheel, west Duffla Hills, south Narainpore Mouzah, and on the north by the Ragghor, a large embankment constructed by the Assam Kings to separate their territories from the hill tribes. Locality. Geography and nature of soil.

The soil is sandy, argillo-arenaceous and argillo-ferruginous.

2. The number of cattle before appearance of the plague was about 3,000. Number of cattle in the locality.

There were about 187 to the square mile. This calculation is based upon the impression that not more than ⅛th of the area of the sub-division is under cultivation.

3. There is only one description of cattle known in the country from time beyond recollection by any of the oldest inhabitants; they resemble in appearance the cattle in Lower Bengal; in particular localities where pasture is more luxuriant the cattle are for the most part superior in size and condition. Plough oxen previous to the plague sold from Rs. 30 to 40 per pair, and milch cows sold at anything from Rs. 7 to 10; calves were seldom purchased or sold separately, but were generally valued at Rs. 3 to 4 when sold with a cow. I should say the average value per head to be about from Rs. 10 to 12 per head. Now, I should fancy, cattle cannot be purchased, and if they can be, most exorbitant prices will prevail. I know of no sales since the disease appeared. Ten years ago cattle could be procured at from Rs. 5 to 7 per head, on an average. Different breeds of cattle and average value.

4. Cattle are used for ploughing. The ploughs used by the natives consist chiefly of wood of a very primitive manufacture, being simply a crooked piece of wood, with for the most part a bamboo ploughshare; they are used from about 6 A. M. to 10 A. M.; bullocks are universally used on ploughs. Cows which are barren are only used for agricultural purposes by an infinitesimal part of the population, bearing the denomination of *moreas*. Cattle are not used for draught or burden. Uses for which cattle are employed.

Oxen are very frequently driven in plough with excoriated necks; minute flies generally settle on the sore, and the animal is kept in a perfect strike of torment, which renders it unable to graze with comfort under such an infliction. A bullock gets attenuated and is utterly incapacited to perform his work efficiently.

Milch cows are kept for the supply of milk and breeding, also buffaloes. About 50 per cent. of the total stock are used for each of these purposes.

5. In some parts of the country subject to inundation, raised platforms are used, but, as a rule, ordinary huts are occupied. Mode of housing.

Cattle-sheds have thatched roofs, without any walls; but in places which are infested with tigers, wooden poles are used as walls to protect cattle from those animals.

[NOTE.—The cattle plague began at the end of March in this sub-division, and lasted to the end of September.]

BURPETTAH.
S. Campbell, Esq.

Mode of feeding and watering.

6. The cattle are generally tended in herds on large *pathars* or plains, where they graze from an early hour in the morning till sunset; they are then shut up without any other feeding. The *pathars* generally have stagnant pools, and sometimes little *jauns* or rivulets, in their vicinity, and the cattle are watered at them as often as three to four times a day.

The varieties of grass eaten by cattle are known as *doobree, dholl, aralee,* &c. Fodder is only partially used during the rains in localities more than ordinarily subject to submersion, consisting of paddy straw.

Cattle find water in tanks, bheels, rivulets or *jauns,* and rivers large and small.

Whether herded by day or night.

7. Cattle are herded during the day and shut up at night, but after the gathering in of the harvest, they are allowed to remain unattended night and day for about six weeks to three months, the time varying in different localities. Cattle are not herded and driven to other districts for pasture.

General condition.

8. The general condition of cattle, as already stated, depends entirely upon the part of the country; in some parts grass is more plentiful, and in others not so.

Stock how kept up.

9. The stock is kept up by in-and-in-breeding among the cattle of the sub-division. No special bulls are kept. There is no importation of cattle.

Mode in which cattle are bought and sold.

10. Dealing in cattle is chiefly managed by money payments, but sometimes exchanges are made; it is considered unlawful by the majority of the population to plough with young oxen which have been bred at home, hence the practice of exchanging. There are no markets in the locality, nor is there any export of cattle or trade in hides.

Mortality.

11. The ordinary mortality is about 15 per cent. The mortality from plague as shown by results is a little over 50 per cent. throughout the sub-division.

History of plagues.

12. In 1852 there occurred a disease which carried off many head of cattle. I have no record of the probable number; the symptoms, however, did not resemble the late plague. In the former, the animals used to be seized with violent thirst, and used to imbibe large quantities of liquids, resulting in death after three or four days. The epidemic did not rage so severely here in 1852 as it did on the south bank of the Berhampooter, particularly near the Magoolie Islands and near Golaghat. I am unable to say whether the plague which occurred in 1853 extended generally all over the sub-division; as far as I can recollect, I think the disease also broke out at Debrooghur, the Sudder Station.

Character of plagues; source, cause, mode of spread, &c.

13. In the sub-division, the present plague first appeared to travel along the extremes of the same; from the southern part it appeared to rage fiercely in May and June, and lasted about five months.

The usual symptoms were,—an animal used to refuse its food, *i. e.,* to graze, for two or three days, at the lapse of which period diarrhœa usually appeared, and death resulted usually from 24 to 48 hours subsequently; in some instances death did not occur till about 70 hours after; but instances of this nature were rare, and I cannot say I observed more than two or three. The cause of spreading I can only ascribe to contagion.

Statistics of cattle plagues.

14. About 1,200 head of cattle, including buffaloes, died during the late plague, and from natural causes about 4,000.

The proportion per cent. of attacked was 50. The proportion per cent. of recoveries about 4 per cent. on an average. The proportion per cent. of deaths was 96 per cent. of those attacked, I should calculate.

Kind of cattle most liable to attack with regard to breed, age, sex, and condition.

15. All cattle are alike liable to attack; well conditioned cattle usually succumbed earlier than attenuated ones. About 40 Rungpore bullocks imported by a Tea Company escaped the disease; they are the only imported cattle here. Cattle in good condition were more prone to catch the infection than lean ones; they rarely survived the attack.

Symptoms.

Swelling of tongue and throat.

16. The symptoms observed were:—extreme lassitude; death by diarrhœa, causing extreme exhaustion; no shivering; no appetite for days previous to attack, nor rumination; skin temperature and hair were about as usual; no eruption; the tongue and throat were partially swollen, but this was not externally visible; no difficulty in breathing or cough were perceptible; mucus was usually voided from the bowels, but occasionally discharges of blood and mucus were combined; the secretion of milk was suppressed; the milk was poisonous to calves, death usually resulting.

17. I am of opinion that the cause of the present plague raging as it has done, is principally owing to the want of proper attention to sanitary arrangements. The practice of allowing carcasses to lie rotting on the ground has no doubt promoted the virulence of the attack, and has perhaps been productive of the infection assuming different phases; but, as I have already indicated above, there was only one form here, and I cannot therefore say with any

degree of certainty much under the latter head. There can, however, be no doubt whatsoever that proper sanitary arrangements were never observed, and, with the exception perhaps of a few villages in the direct vicinity of the sub-divisional station, the dead cattle were never buried. BURPETTAH.

18. No sanitary measures whatsoever were adopted in the villages at any distance from the station; no disinfection or separation of sick and healthy was attempted. Sanitary measures.

Burial of carcasses was not practised, except a few cases round the station; in the villages they were simply thrown away, and were allowed to rot. I noticed that two jackals died from partaking of a carcass.

19. I saw several deer dead in the jungle; the pigs in the *meree* villages were attacked; in some villages they were all carried off by the disease. The symptoms in swine were nearly the same as in cattle. Prevalence of disease among other animals during cattle plague.

20. I may mention a peculiar circumstance connected with the plague: it made its appearance on the south bank of the Subansiri river and carried off from a *meree* village all the buffaloes and other cattle there, but, strange to say, did not cross the river directly opposite to a village called Pothaltipalin, while up to the time I left, North Luckimpore had not been visited by the scourge.

From CAPTAIN JOHN GREGORY, *Deputy Commissioner of Luckimpore, to the President of the Cattle Disease Commission,—(No. 877, dated Debroogurh, the 15th January 1870).* DEBROOGURH. Capt. John Gregory.

In accordance with instructions received from the Bengal Government through the Commissioner of Assam, I have the honor to furnish such information required by your letter No. 100 of the 6th ultimo, to the address of the Secretary to the Government of Bengal, as is procurable by me.

2. The name of this District is Luckimpore; for administrative purposes it is sub-divided into two sub-divisions, the Sudder and North Luckimpore, the former on the south, the latter on the north bank of the Berhampooter; through the former, the Booree Dehing, and the latter, the Subansiri—both comparatively large rivers—run latitudinally. For revenue purposes the district is sub-divided into 96 Mouzahs. In the Sudder Sub-division the disease has appeared in the following Mouzahs of Debroogurh:— Locality.

Mankutta.	Loroah.	Affected localities.
Labooka.	Khowung.	
Borpathar.	Lazai.	
Jameerah.	Koowargas.	
Lahwol.	Gohine Gao.	
Madarkhat.	Dyneejan.	
Teta Demaroo.	Kodomonee.	

In the North Luckimpore Sub-division—

Gorahaga.	Nowkarry.
Narainpore.	Sooteah Karry.
Luckimpore.	Tellahi.
Kodom.	Nowboysha.

3. The disease first broke out in the Narainpore and Bangfang Mouzahs, near the Dikrang river, in the North Luckimpore Sub-division, early in April, amongst a batch of Bengalee imported buffaloes, and spread to the country buffaloes of Kherkatte Gao about the 15th of May. Date and place of outbreak.

4. The number of deaths amongst cattle from the disease up to this day in the whole district is 10,233. Mortality.

5. It was only on the 27th October last that an account of seizures and recoveries was opened; prior to that date fatal cases only were recorded, and there is no record of the total number of cattle which existed in the district prior to the outbreak of the plague. The number of seizures, recoveries, and deaths from the 29th October 1869 up to date are as under:—

Seizures	4,896	Statistics.
Recoveries	450 or 9·3 per cent.	
Deaths	4,408 or 90·3 per cent.	
Still ill	31	

6. There is no doubt but that the disease is infectious in the highest degree; as a proof of this, I may mention that in one instance it broke out in an isolated village on the Subansiri, the only means of communication with which is by boat, so that no strange cattle could have been introduced: it and its outbreak were traced by the villagers to the visit of a traveller from Luckimpore, where the disease was raging at the time, who must have carried the infection in his clothes. In another instance the horn of a dead buffalo, taken into a village on the Noa Dehing, carried the contagion. Infectiousness.

DEBROOGURH. Capt. John Gregory.

7. There is no doubt but that the disease was introduced into the district by a batch of Bengalee imported buffaloes.

Symptoms.

8. The following are the symptoms:—

The coat appears rough; there are no eruptions on the feet or body; eyes and nostrils water; the ears are cold and lowered in an unnatural position; there is short hacking cough; there is a difficulty in breathing, with great longing to drink cold water,—a longing which, if indulged in, often proves fatal; the stomach is distended, and the animal generally becomes a victim to severe dysentery; the urine is high-colored and the bowels are in the first stage constipated; when diarrhœa sets in, the evacuations are highly offensive, and on dysentery coming on, are of a thin watery character, mixed with blood and mucus; the gums swell and become sore, so that the animal gradually ceases grazing.

9. Some animals are carried off the first day, but in the majority of cases they live from seven to nine days.

Sanitary measures. Prevention of cattle movements.

10. On the 19th of June, when the highly-infectious and fatal character of the disease became apparent from the reports from North Luckimpore, I issued orders to the police to post guards to prevent the passage of cattle at the following Ghats:—

Berhampooter River.
Lalooka Ghat.
Subansiri River.
Allimarra Ghat and Gogarmook Ghat.
Dehing River.
Bor Borooah Ghat.
Tipling Ghat.

Sale prohibited.

11. On the 26th of June, the disease having broken out in the military cantonments, I issued a proclamation warning people against purchasing cattle from the sepoys, and directing

Burial.

the burial of all dead cattle.

Reports.

On the 28th of June I issued another proclamation directing that all owners of cattle should report the outbreak of the disease and fatal cases to the nearest Police Station.

Quarantine; cordon.

12. On the 14th and of 15th July further proclamations were issued declaring the affected mouzahs in quarantine, and I drew a cordon of Police round them to prevent the egress of cattle, and issued a circular to European residents asking their co-operation in maintaining the

Carcasses.

quarantine; and on the 1st of July another proclamation was issued forbidding carcasses being thrown into the river Debroo above the Meklah Mook. From the 26th of June, when the disease first began to rage with virulence, the most strenuous efforts were made to dispose of the carcasses: the aid of the military was invoked, the carcasses were collected and dragged by elephants to the ghats, there shipped in boats, and carried to, and thrown into, the Berhampooter, then swollen by the rains. Resort, however, was not had to this expedient until the mortality became so great and rapid as to make it impossible to bury the carcasses.

Treatment.

13. In accordance with the instructions of Government, prescribing the trial of treatment of the disease with carbolic acid, Dr. White, the Civil Surgeon, who prior to this had treated affected cattle with varying success with a preparation of ipecacuanha, made during the month of September the experiments described in the two reports annexed.

14. On the 18th of November, Mr. Farrell, Veterinary Surgeon, arrived, and the result of his treatment, and the preventive measures suggested by him and carried out under the instructions of this office, are detailed in his report annexed.

Present disease.

15. I regret to say that the disease is still raging, and that the number of deaths averages 70 per diem.

16. I may add that on learning that Mr. Farrell's Salootries had met with opposition from the ryots, who objected to the treatment of their cattle, I addressed a note to the great Gossains, with most of whom I have a personal acquaintance, asking them to use their influence with their disciples to induce them to co-operate in the remedial and preventive measures initiated by Government.

LUCKIMPORE. Capt. John Gregory.

Examination of CAPTAIN JOHN GREGORY, *Deputy Commissioner of Luckimpore,—(taken on the 9th February* 1870).

Question.—How long have you been in Assam?

Answer.—Since October 1862; a little more than 7 years.

Question.—In what capacities?

Answer.—In civil employ.

LUCKIMPORE.

Question.—In what districts?

Answer.—In Seebsaugor, Nowgong, Naga Hills, and Luckimpore.

Present Disease.

Question.—Is not cattle disease prevalent in this district now?

Answer.—Yes, the natives call it *maora*; English, cholera.

History.

Question.—During your residence in Assam have you ever had any experience of cattle disease of a similar nature to the one now prevailing?

Answer.—There was murrain among cattle when I was in Nowgong in October or November 1866, but I cannot say of what nature it was.

Question.—Was it as distinctive as this in its results?

Answer.—I cannot give a positive answer, but it did not extend over such a large extent of country as the present outbreak has.

Number of cattle.

Question.—Can you give any approximate idea as to what was the number of cattle in this district before the present plague commenced?

Answer.—No; I can form no idea.

Mortality.

Question.—Can you state with regard to the number of deaths which have occurred?

Answer.—Up to the 15th January 1870 it was 10,233, by the reports submitted by the Mouzahdars, which I do not consider altogether reliable.

Agriculture.

Question.—Are you of opinion that this mortality will seriously interfere with the agricultural interests of the district?

Answer.—No, I do not think so at present, as there are still large tracts of the district which have not been affected which are overstocked with cattle, and from which the infected places will be able to obtain fresh supplies.

Price.

Question.—Do you think that the price of cattle will rise to any great extent in consequence of this murrain?

Answer.—Yes, I think that it will make a difference of at least 25 per cent. in their price.

Origin.

Question.—When and where did the disease first show itself in this district?

Answer.—I was not here myself, but from what I have ascertained, it first showed itself at the end of March or beginning of April 1869 in the sub-division of North Luckimpore.

Question.—Have you any knowledge as to how it was first introduced there?

Buffaloes.

Answer.—Mr. Campbell, the officer in charge of the above-named sub-division, informed me that it was introduced by a batch of imported Bengalee buffaloes, and this agrees with my own opinion derived from inquiries made in the District of Seebsaugor, where I first came across the disease on my way to join my present appointment.

Sanitary measures.

Question.—On your first joining, you say that the disease had commenced; did you find that any means had been taken to stay the spread of it?

Answer.—No, I did not; but at that time little notice was taken of the disease, as people did not seem to learn of what a virulent type it was.

Question.—How soon afterwards were any measures taken?

Answer.—Very soon after, but I cannot say exactly when without referring to my notes; at the time I speak of, the disease had not spread to the south bank of the Berhampooter in this district, so I placed Police guards at the Berhampooter, Subansiri, and Deehing Ghats, to prevent the crossing of cattle.

Effect of measures.

Question.—Did these precautions prevent the spread of the disease?

Answer.—Yes, I think they did; but the disease was introduced to the south bank of the Berhampooter in this district by some cattle brought from lower down the south bank of the river, *i. e.*, from the Seebsaugor District, by a sepoy of the 42nd Assam Light Infantry.

Infectiousness.

Question.—Do you consider the disease infectious?

Answer.—Yes, highly so.

Treatment.

Question.—Have any remedial preventive measures been attempted by the natives themselves?

Answer.—Remedial measures have, but with no effect; the natives have not attempted any preventive measures for themselves; I have, and I think with tolerable success.

Preventive measures.

Question.—In the event of another outbreak, what course do you think should be adopted?

Answer.—I am of opinion that the legislature must interfere, as the local authorities have at present no authority to enforce the carrying out of the arrangements which they may consider it necessary to make. I have given my ideas on this in a letter to the Commissioner, a copy of which I will forward to the Committee.

DISTRICTS OF LUCKIMPORE AND SEEBSAUGOR.

DEBROOGURH.

H. Farrell, Esq.

From H. FARRELL, Esq., V. S., *to the Deputy Commissioner, Luckimpore,—dated Debroogurh, the* 10*th January* 1870.

Preventive and curative measures.

I have the honor to submit the following as the means adopted for the prevention and cure of the cattle disease in the District of Luckimpore. I arrived here on the 18th November 1869, and the day following commenced my investigations. I learnt that the disease was raging in Madarkhat and around Lahowl. I sent two Salootries with medicines to Dr. White, who kindly undertook to direct them to the afflicted villages. I proceeded there myself in company with Dr. White, Civil Surgeon, and saw some cows; we were fortunate in getting the carcass of a buffalo that had died of the disease. On making a *post-mortem* examination, we were both confirmed in the opinion that the disease was the same as the rinderpest or murrain of Europe.

The two Salootries sent treated in all some forty cases, of which nineteen recovered, and the rest died. The ryots, however, refused latterly to take medicines of any kind or attend to preventive measures, and even threatened violence when my Salootries went near the villages: I therefore recalled them at once.

Guards.

A guard was at the Sessa bridge to prevent all cattle entering or leaving Debroogurh.

Buffaloes.

Some few days after I learnt that some buffaloes that had been brought into the station of Debroogurh for sale from Seebsaugor, where the cattle disease was raging, had communicated it to the cattle by one of the number being purchased and taken over by a ryot in a village some two miles inland, on the north bank of the Debroo river. I wrote to Lieutenant Maitland, asking him to warn all cattle owners of it, and if possible to prevent the cattle crossing over to the north bank. I also asked him to have a guard placed at the Dehing Ghat, to stop all cattle crossing. At the same time I wrote to the Station Staff Officer to carry out the same measures respecting the cattle in cantonments crossing the river, &c.

Treatment.

The treatment and preventive measures recommended in the circular, a copy of which I enclose, have been carried out by myself and by Salootries I have also administered in several cases hyposulphite of soda in two ounce doses, repeated every three hours, instead of the carbolic acid, and I am happy to say with some success. I regret, however, to state that I have

Opposition.

been compelled to give up all attempts at further treatment, &c., owing to the difficulties I have to contend against on the part of the ryots; besides being ignorant and apathetic, they are so prejudiced, evidently worked up by their Gossains, that they stubbornly resist everything that is done for their own good and welfare.

I have received every assistance from the officials, both Civil and Military, and the Police, during my investigations in the district, and for which my thanks are due.

I propose remaining in Debroogurh to meet the Cattle Plague Commission, who, I am given to understand, are about to visit Assam, and will shortly arrive by the Steamer *Colgong*.

P. S.—I left on the 3rd December for the Seebsaugor District; during my absence one Salootrie was left under the orders of Dr. White, Civil Surgeon, with medicines to attend to all sick. He distributed large quantities of medicines to the ryots of Jameera Pergunnah; these ryots being of a different caste to the Muttucks of Madarkhat, showed readiness to take medicines and carry out preventive measures; they succeeded in curing a large number.

Evidence of H. FARRELL, Esq., V. S., *recorded at Debrooghur,* 21*st January* 1870.

Localities.

Question.—How long have you been engaged in investigating cattle murrain in Lower Bengal?

Answer.—I have been engaged in inquiring into the cattle disease in Lower Bengal since August 1868. From August 1868 to January 1869 I was employed in the District of the 24-Pergunnahs, including the sub-division of Diamond Harbour, acting under the orders of the Lieutenant Governor; from May to October 1869 I was employed in Jessore and the Sunderbuns on the same work; and from December 1869 up to date I have been employed in Assam.

Physical geography.

Question.—State generally the character of the country in which you have found cattle plague prevailing.

Answer.—In Bengal, *i. e.*, in the 24-Pergunnahs, Jessore, and the Sunderbuns, in low lands subject to annual inundations more or less; in Assam, for the most part in low lands and in villages on the borders of the *pittars* or large tracts of rice land, the disease was almost invariably most severe; in one instance, in the vicinity of Sonari near the Naga Hills, I met with the disease in the undulating lands at the foot of the hills, about 18 or 20 miles from the hills themselves.

Question.—Have you any idea of the number of cattle in the different districts mentioned by you; and if so, their number per square mile?

Number of cattle.

Answer.—No; I have no idea, and have been unable to get any statistics; though I have made every inquiry from the District Officers, they have been unable to render me any assistance on the point. At a rough guess, from what I have seen for myself in Assam, I should think that we might say there were six or seven head of cattle to each house, whilst in the districts of Bengal to which I have been, I should not put the average at more than two to each house, if so much.

Breed.

Question.—Will you kindly state the different breeds of cattle you have met with during your investigation?

Answer.—In Bengal and the Sunderbuns, *i. e.*, Lower Bengal, the breed is all one, *i. e.*, a small breed ranging from 11 to 13 hands; though in Jessore, near the indigo factories, you meet with a larger breed, which I should think had been originally imported. There are also a few buffaloes in that part, but very small animals.

In Assam the breed of cattle is even smaller and more miserable-looking than in Bengal; on the other hand, the buffaloes are finer than any I have seen in any other part of India; this I attribute to the fact of their being crossed with the wild buffaloes. I have also met in Assam with some of the larger Up-country breed of cattle, the property of Tea Planters; but these are all imported.

Price of Cattle.

Question.—What is the average price per head of the different breeds you have described now and 10 years ago?

Answer.—In the 24-Pergunnahs a plough bullock is worth from Rs. 25 to 35, and a cow about the same price; these same cattle I was given to understand would have been half as cheap again some years ago before the disease made its appearance in those parts. The same prices range about Jessore, but in the Sunderbuns they are a little higher. It is hard to say what the difference in the prices will be in Assam, as before the disease showed itself, all the lands had been prepared, and the bullocks have not since been required, hence no purchases have been made; but I am given to understand that all those in a position to sell are holding back and asking increased prices, at least double those previously paid. I have not heard that the price of buffaloes has changed; they have always been expensive; being worth from Rs. 60 to 100.

Uses of cattle.

Question.—For what purposes are the cattle employed in different districts?

Answer.—In Bengal the bullocks are used for both agriculture and carts; in Assam only for agriculture. The cows in both places are only used for dairy purposes. In Assam, about the tea factories, the bullocks are used in carts, and carts only.

Agriculture; ploughing.

Question.—Please give particulars as to employment of cattle for agricultural purposes.

Answer.—Cattle are yoked in ploughs and harrows. Whilst ploughing they are generally up to their knees and hocks in slush and mud. During the agricultural time they are worked all day with only a short rest, and usually feed on whatever they can pick up in the middle of the day: this is in Lower Bengal. I cannot give any information with regard to Assam, I was not here at the time. The ryots do not look after their bullocks in the way of cleaning them, nor do they feed them during the time they are at work. The ploughing time lasts for about four months, from May to August; during that time the cattle are no doubt very much overworked, so that their condition becomes very bad, and I have no doubt that their constitutions are permanently injured by it. I have never seen cows used for agricultural purposes, though I have heard that they are so used in the Sunderbuns; but this I attribute to the scarcity of bullocks.

Draught.

Question.—Please give particulars as to the employment of cattle for draught purposes.

Answer.—In Lower Bengal the bullocks are yoked to a small bamboo cart capable of taking from six to eight maunds. I have known them travel a distance of 30 miles in the 24 hours, but the average is from 20 to 25 miles, at a rate of about 2 miles an hour. They are chiefly used for taking the rice straw into market, being fed for the most part twice in the 24 hours on either straw alone or straw and *kulee;* this traffic is carried on during the slack season, *i. e.*, when the bullocks are not wanted for ploughing, though of course some are used exclusively for carts; but these are comparatively very few. There is a continual traffic going on into Calcutta from all the surrounding districts where roads are to be found.

In Assam bullocks are only used in carts by Planters and Europeans, and these are all of an imported and larger breed than those common in Assam. The buffaloes are used for pulling logs of timber; they are yoked singly, and I have also in a few places seen them used in carts.

Dairy.

Question.—Please give particulars as to the employment of cattle for dairy purposes.

Answer.—In Bengal the cows are milked generally once a day at about 10 or 11 A. M., after which they are turned out to graze and brought in at night with the other cattle, though in some places they are not even brought in. In Assam the custom is very much the same, though there they are not housed even so much as in Bengal, only being brought in for the most part during that part of the year when the crops are on the ground; during the rest of the year they are not housed at all.

ASSAM.
H. Farrell, Esq.
Proportion of male and female.

Question.—What is the proportion of cattle used for each purpose?

Answer.—In Bengal, I should say that there were from 15 to 20 bullocks to each cow. In Assam, I should think there was an equal number of bullocks and cows, or perhaps cows preponderate.

Ryots in the Mofussil in Bengal put more value on a bullock than they do on a cow, and so keep the bullocks, whilst they part with their cows to *gowallas*, who send them up to Calcutta, where they are used for dairy purposes. I say this, as it is the only way in which I can account for the number of bullocks being so much in excess of that of cows. Another reason is that a ryot very seldom breeds his own cattle, but purchases bullocks, as he requires them, from the herds which are imported.

Housing.

Question.—Are the cattle housed or not; and if so, please give a description of the sheds used?

Answer.—In some parts of Bengal (*e. g.*, 24-Pergunnahs) cattle (*i. e.*, bullocks and cows) are housed all together and indiscriminately. In other parts of Lower Bengal they are not housed at all. In Assam, in the cultivating season, cattle are collected and either herded in the open or in sheds. In both Assam and Lower Bengal the sheds are constructed of bamboo, thatched, sometimes walled, and sometimes not; this herding takes place during the rains. The huts or yards in which the cattle are kept are not raised; I have seen cattle up to their hocks in slush in their own manure in those places. They are not cleaned out, as a rule. These sheds will accommodate 20, 25, or 30 head. They are almost invariably overcrowded.

Feeding.

Question.—How are the cattle fed and watered during the different seasons of the year?

Answer.—In Lower Bengal cattle are, during part of the year, when the crops are not on the ground, allowed to graze at will both by day and night, as a rule. In the cultivating season they are grazed on the uncultured portions of land in charge of a herdsman; they are never stall-fed at any season. In Assam the system is the same, though after cutting the crops they are better off than in Bengal, as in this province only the ears of the rice are cut, and cattle are allowed to eat the rice straw which is left on the fields. Bullocks belonging to Europeans are stall-fed. The limited area on which cattle can graze during the cultivating season, together with the amount of work required of them, unite as causes of their low condition at this time.

Watering.

Cattle are not watered systematically. In Bengal *boossie* (rice husk) is a marketable commodity and is stored for market. In Assam it is not marketable, and is given to cattle, and even stored in houses for that purpose and given indiscriminately to bullocks and cows.

Fodder.

Question.—Can you give the names of the different kinds of grass upon which the cattle feed in the different districts visited by you?

Answer.—In Bengal cattle feed principally on the *doob* grass, which grows on the ridges between rice fields, and which also grows luxuriantly amongst the rice stubble; in the Soonderbuns they also feed on the young shoots of *ooloo* grass, a coarse species used for thatching. In Assam cattle feed on a coarser variety of *doob* grass; there is also a still coarser reed grass from 6 to 14 feet high, on the leaves of which cattle feed. After the subsidence of the inundation, when all other pasture is dried up, cattle feed on a coarse rank grass which grows in pools where water has lodged. Here also a kind of plant called *korkutcha* grows, which in times of scarcity of other food cattle eat. Cattle are never stall-fed, except by *gowallas* and well-to-do ryots. In these latter cases they get mustard, oil-cake, chopped straw, boiled rice, *boossie*, and chopped plantain stems and other boiled vegetables. As to water, they obtain it from tanks, rivers, stagnant pools, fields in the rains, and khalls.

Water.

Herding.

Question.—Are cattle ever herded for the purpose of taking them to other districts for pasture; if so, whither, what distance, and at what season?

Answer.—Not, that I am aware of, in the districts in which I have had experience.

Condition.

Question.—What is the general condition of the cattle in the districts visited by you?

Answer.—Both in Bengal and Assam I have found cattle, as a rule, in as bad a condition as they could be; if possible, the Assam cattle worse than the Bengal. Cattle belonging to Europeans and rich Natives are of course in better condition. I attribute the general low condition of cattle to their being badly fed, overworked, and uncared for, as also to neglect of a proper system of feeding.

Importation.

Question.—How is the stock kept up in the several places visited by you?

Answer.—In Bengal and the Sunderbuns, mainly by importation of cattle from other districts. In Assam mainly by breeding.

Breeding.

Question.—Be good enough to give details as to the breeding of cattle in those places where the stock is kept up by breeding.

Answer.—There is no system of breeding. No special bulls are kept or imported, or even selected for breeding purposes. Bulls are allowed to associate indiscriminately with a herd of cows both in Bengal and Assam. In Bengal you generally see 2 or 3 bulls to a herd of cows (20 to 30), while in Assam there is almost an equal number of bulls and cows,

owing to the system which prevails in Assam of not gelding bulls till they are two or three years old, or until they are wanted for sale. The demand for bullocks not being great, there is a large number of bulls, even old bulls. The increase of cattle by breeding in Assam has been in excess of the local demand. There is no exportation from Assam. ASSAM. H. Farrell, Esq.

Question.—Be good enough to give details with regard to importation. Cattle trade.

Answer.—In the Sunderbuns and those parts of Lower Bengal where the demand is greater than the local supply, cattle are imported from other districts, namely, Midnapore, Orissa, Chota Nagpore, and Sonthal Pergunnahs. Large numbers of cattle are imported from the Upper Provinces for draught and dairy purposes. In Assam buffaloes are imported from Lower Bengal and a few bullocks of the larger and better kind by Planters. In Bengal, they are imported in the months of April, May, June and July by road, by means of dealers, and sold at hâts held sometimes weekly. In some places, at certain seasons, there are large cattle fairs (*e. g.*, Ooluberia, Dum-Dum, &c.) In Assam buffaloes are brought from Lower Bengal by the Trunk Road before and after the rains (January to March). The Planters' bullocks are generally brought by steamer.

Question.—Please describe the mode in which local dealings in cattle are conducted. Markets.

Answer.—By local markets and private sales, both, in Bengal; but in Assam I have not heard of any cattle markets; all interchange of cattle is made by private sale.

Question.—Please inform the Commission whether there is any trade in hides in any of the districts visited by you; and if so, how conducted. Hide trade.

Answer.—In Lower Bengal there is no doubt that a great trade in hides is carried on. The way in which it is carried on is this: a Chamar takes from a Zemindar the *tika* of all or certain of the villages belonging to his Zemindaree, for which he pays a certain rental which entitles him to the hides of all the cattle which may die in those villages. That same Chamar has dealings with some factories in Calcutta or elsewhere where the hides are collected for sale or export, and in case of necessity he receives advances from the owners of those factories through a broker, who travels through the districts for the purpose of effecting contracts and making advances. During the last 5 years the demand for hides has considerably increased, the consequence of which has been that more people have entered into the trade; and the competition being greater, the price of hides has greatly increased. Five or six years ago a score of hides could be bought for Rs. 10; now Rs. 30. I would here mention that between the Chamars and the brokers there is a regular bond drawn up to the effect that so much money has been advanced on the condition that a certain number of hides of different values (according to what class the hides supplied came under) are supplied. There is no mention of any payment, except in kind, and the consequence of this is, in my opinion, that, especially in healthy seasons, a great deal of poisoning goes on; though I also think that the prevalence of the disease does not entirely do away with the temptation for the use of poison, as the price of the hide of an animal killed by poison is much higher than that of an animal which has had a long and lingering death. I referred to different classes under which hides were sold: they are these,—first, slaughtered—*hullalee;* second, died from natural causes, amongst which those poisoned are included—*murdah*; third, those which have died from long and lingering diseases by which their hides have been injured, and which are called *dagee*. There is but a very small difference in the price of the hides of the two first classes, whilst the price of the *dagee* hide is comparatively very small. Varieties of hides.

I have myself seen one of the contracts entered into in the hands of Byeuntoo Chamar of Purumpore, in Jessore; my report of the 14th September 1869, to the Magistrate of Jessore, contains all particulars. I believe this report has not as yet been published. The hides have to be supplied within a certain time, so that if they cannot be got by fair means, there is no doubt that the Chamars have but little hesitation in resorting to foul. The number of dealers in hides in these parts, I am of opinion, has increased to an enormous extent, and where five years a ago there were two traders, there are now six. The right to collect the hides of a village are considered as binding as the right to collect the rents of these villages, and can be, and are, sued for in Courts. The hides are all collected for the Calcutta markets, to which place they are exported by all means, *i. e.*, rail, road, and river. In Bengal there are also markets held weekly for the express sale of hides and leather, and I have noticed that in the vicinity of these markets the cattle disease has been worst—Rajah Hatti, Kulpee, Magoorah. In Assam there are no Chamars, and there is no sale for hides or any leather trade. My report referred to above will also give all the information regarding the poisoning of cattle. Contracts. Hide markets.

Question.—Can you give the ordinary mortality among cattle in the districts you have visited, or the mortality by plague? Mortality.

Answer.—No, I cannot, as no register is kept of the ordinary mortality; and with regard to deaths from plague, I could only report of those villages which were visited by me.

Question.—What is your opinion as to the nature, source, cause, and mode of spread of the cattle murrains you have had experience of in Bengal and Assam? Murrains.

Answer.—In my opinion, the disease is a low, malignant sort of fever, of a typhoid type, in some particulars resembling the small-pox in a human being, highly infectious and contagious,

Nature of disease. and in every respect resembling the disease known as rinderpest in Europe and the Steppes of Russia. As to the source of the disease, I am of opinion that it is indigenous to the country, being retained in the low, swampy lands of Bengal and Assam, and only awaiting favorable conditions of season and climate in which to show itself. When once thus developed, it spreads of itself by contagion and infection. There is nothing to show that the disease has been introduced into the country, though it may be and is introduced from one district to another. I cannot give the immediate cause of the disease. The disease is spread by every possible means, such as herding together, absence of segregation of healthy and diseased cattle, neglect of burial, cattle and hide trade, cowherds and owners of cattle passing from one land to another, &c., &c.

I have never seen a case of rinderpest as known in Europe; my knowledge of that disease is from what I have read in reports and books. I explain the smaller mortality in this country compared with England by the circumstance, that here the disease is indigenous as in Russia, where the mortality is also less, whereas in England the disease was imported. I have found that healthy cattle imported into an infected from a sound district always exhibit severe symptoms, and die off in greater numbers and more rapidly. I found this statement on personal experience in the 24-Pergunnahs. I have also observed that a plague imported into a sound district is more severe than it has been in the affected places.

Season. *Question.*—What are the seasons in which plagues are found to prevail in Bengal and Assam, and are not drought or scarcity of water and food causes?

Answer.—I find that plagues generally break out just before the rains (from April to June), when there is scarcity of food, and the cattle have to eat the rank grass that has grown in pools, and after the rains, when the inundation has subsided, and there is much decay of vegetable matter. Foot and mouth disease generally occurs during the rains, and I attribute it to the cattle standing in dirty, muddy, and filthy sheds. The cattle murrains that I have met with in the three districts that I have visited have been *gootee* (known under different names, such as *puschima, dukina, burra rog, seetla,* &c.) and a few cases of foot and mouth disease (*khoorah*).

Names.

Question.—What has been the general duration of murrains which have come under your notice?

Answer.—The Diamond Harbour epizootic raged, I believe, from April 1868 to January 1869. I say *believe,* because I did not go there till August. The Jessore and Sunderbuns plague from May to October 1869, and the Assam plague from April 1869 to the present time.

Statistics. *Question.*—Can you give the number per cent. of cattle attacked in a district where *gootee* has prevailed, also the number per cent. of recoveries of those attacked, and number per cent. of deaths; lastly, number per cent. not attacked?

Answer.—I cannot give any approximation for a whole district, but I should say in a herd of 500 cattle, 300 (60 per cent.) would be attacked; of these 300, about 75 (25 per cent.) would recover and 75 per cent. die. This is taking a general average, for I have found invariably that the mortality is greater at the commencement of an outbreak than towards the termination, whether the disease breaks out spontaneously or is imported.

Liability to attack. *Question.*—What kinds of cattle are most liable to disease with regard to breed, age, sex, and condition?

Answer.—I found pregnant cows more liable to attack by the disease, and have noticed that they always abort. As regards breed, age, and condition, I find that these circumstances make no difference. I have observed, however, that buffaloes attacked with *gootee* seldom or never recover, even when treated.

Symptoms. *Question.*—Will you be so good as to describe the symptoms of the murrain *gootee* as observed by you?

Answer.—I have given all the information I possess on that subject in my published reports, to which I beg to refer the Commission.

Post-mortem appearances. *Question.*—Please describe the *post-mortem* appearances of cattle that died from *gootee.*

Answer.—Same answer.

Question.—Have you observed in any of the *post-mortem* examinations perforation of the fourth stomach or bowels?

Answer.—I have observed in three cases (a buffalo and two cows) perforation of the fourth stomach from ulceration, which in those cases extended into the small intestines.

Question.—In what condition have you found Peyer's patches and the solitary glands of the small intestines?

Answer.—I have invariably observed Peyer's patches enlarged and ulcerated at the margin, in common with the surrounding mucous membrane. I have sometimes noticed an issue of purulent fluid on pressure. I have sometimes found the solitary glands of the small intestines enlarged and surrounded by a ring of congestion, but not invariably. These appearances were best marked in three *post-mortems* of buffaloes (one wild and two tame) which I made in Assam.

Plates I and II appended to Dr. Murchison's report to the English Cattle Plague Commission remind me of what I have seen. ASSAM. H. Farrell, Esq.

Question.—What is your opinion of the contagiousness of the different varieties of cattle murrain you have met with, and be good enough to state your reasons for holding the opinion, at the same time giving any detailed proofs of contagiousness? Contagiousness.

Answer.—My opinion is that *gootee* is decidedly highly contagious among cattle and buffaloes; I also consider foot and mouth disease contagious. In support of these opinions, I would state the following circumstances derived from my own experience:—

1*st.*—I have watched the spread of *gootee*, and found that it spread from village to village and along a certain tract of country.

2*nd.*—I have observed instances of importation of the disease by cattle having been brought from an affected district. The best instance of this is the case of a sepoy of the 42nd Assam Light Infantry, who brought some cows (2 cows and 2 calves) from Golaghat to Debrooghur in the month of May 1869; at that period there was no cattle disease in Debrooghur, while it was raging severely at Golaghat. He was 8 days on the journey; he arrived at Debrooghur on the 16th May, the cattle looking healthy; these were taken to the lines of the regiment. About a week or 10 days after this, one of the cows in question took ill and died within three or four days of the attack. A cow belonging to a sepoy, which lodged in an adjoining shed, took ill and died of the disease. A third cow died, and immediately afterwards the disease became general, until about the 28th of June the disease prevailed in a most virulent form among the whole herd of sepoys' cattle; about this time the disease became general in the civil station. When I arrived here (18th November) there was no disease in Debrooghur or the immediate vicinity of the station, though there were some cases in the district about the end of November. Before my departure for Suddya, a man came to me and informed me that a buffalo he had just purchased (the day before) at Debrooghur had taken ill in his village, which was about two miles off on the opposite bank of the Debroo river. I went to the spot and found the animal to be suffering from the plague: I then learnt that the animal had come from Seebsaugor, it having come to Debrooghur together with 6 others brought for sale. At the time these buffaloes left Seebsaugor the disease was raging at that place. It had been 3 days on the road, and had been sold the day after its arrival. Five days after I had seen this sick one, 4 out of the other 6 took ill in Debrooghur itself, and the remaining 2 having been sold, I could not trace them. The 5 which I saw died of the disease. I made *post-mortem* examinations of 2 out of the 5, and those are the appearances which I have referred to above.

3*rd.*—I have also known of a case in the 24-Pergunnahs in which the disease was communicated from one place to another by a man. The facts are these:—the man lived in a village near Kulpee in the Sultanpore Thannah jurisdiction; the disease was raging at the time in his village, and he had lost his two bullocks of it; he went to the village of Korunjully, a distance of about 3 or 4 miles from his village, where there had not been and was not any disease. This was in the latter end of August 1868. He went to the village with the view of purchasing a bullock, and for this purpose looked at one and handled it all over, but for some reason or another eventually did not purchase it; 3 days afterwards that very bullock was taken ill of the plague and the disease spread through the whole village. I saw the dead body of the first bullock, and can therefore say that it died of the plague.

4*th.*—Whilst in the 24-Pergunnahs I purchased 3 healthy animals, 1 heifer and 2 bullocks, for the purpose of experimentalizing on them. I placed the heifer and one of the bullocks in two sheds, at a distance from one another; I inoculated the bullock with the saliva of a diseased animal, mixed with the matter obtained from a pustule in the mouth of the same diseased animal. Inoculation. I introduced the saliva and pus mixed together into the inner part of the left ear by means of a lancet; 81 hours after inoculation the animal began to look dull and refused his food. I looked at the ear, but could not find any change or inflammation. The following morning I saw him again between 9 and 10, and observed that the ear was slightly inflamed; the animal was gradually showing greater signs of distress, which went on increasing till the third day, when pustules were observed in the mouth, and then running from eyes, nose, and mouth, and diarrhœa set in, which plainly showed that *gootee* was developed. The animal died the next day before dysentery had set in. On the *post-mortem* examination of this animal, I found all the appearances of *gootee*. With regard to the heifer which I had inoculated with some of the fæcal matter of a diseased animal in the dysenteric stage, and which I introduced into the point of the tail, it showed no signs of having taken the disease till eight days after it had been inoculated, and the disease did not fully develop itself till four or five days more. It ran through all the different stages of the disease, and eventually recovered, being still alive; though last November, more than twelve months after the first inoculation, I again inoculated it with the matter obtained from a pustule on the tongue of a diseased animal. I inoculated the animal in Calcutta, having obtained the matter some months before in Jessore, and which I kept between two plates of glass. I inoculated it on this occasion in the ear, but up to date she has not shown any signs of having again taken the disease.

Inoculation. The third bullock I inoculated also in the ear with water, in which a piece of skin taken from the inside of the thigh of a diseased animal, and on which there were three pustules, had been soaked for twelve hours; there was an ounce of water in the glass. About the fourth day the animal looked dull and refused its food for about a day, after which it recovered and showed no further signs of sickness. I afterwards sold the bullock and lost sight of it.

Treatment. *Question.*—Have you treated many cattle affected with the *gootee*; if so, with success or not?

Answer.—I have treated a great number of cases, I should think upwards of 10,000, in Bengal and Assam. My treatment has been as noted in my official reports to Government; but I would wish to add that in Assam I have tried carbolic acid in conjunction with quinine, 10 drops of Culvert's No. 5 to 20 grains of quinine, doubling the dose in the case of buffaloes. My experiments under this treatment have been partially successful. I tried it in 20 cases, and I find that out of them 9 recovered and 11 died; they were all real cases of *gootee*, and were taken in the first stages. I also tried hyposulphite of soda in 20 other cases; out of them only 7 recovered. I gave two ounces of the medicine every three hours during the day, and found that the animal on an average died or recovered in from three to five days. I also tried after administering physic (in about 13 cases) giving carbolic acid the first day, and from the second day onwards a tincture of the betel leaf—*pawn*,—1lb. of leaf steeped in 2 quarts of spirits of wine, let stand for 14 days. I gave 1 oz. doses every 3 hours; of the 13 cases, 5 recovered, 6 died, and 2 are convalescent. From my experience of the medicinal treatment of *gootee*, I have arrived at the opinion that it is of comparatively little value in combating the disease *gootee*. I have tried sedatives (bhang and opium), stimulants (spirit, turpentine, ammonia), aperients (salts, castor oil, linseed, &c.), astringents (catechu, alum, &c.), disinfectants (carbolic acid, Condy's fluid, and hyposulphite of soda), tonics (quinine, chiretta, and gentian), antispasmodics and carminatives, (asafœtida, ginger, &c.), and am unable positively to affirm that the disease is materially influenced by any of these agents. I don't know of any specific for *gootee*. I tried *karee neemuck* without success, both as a purgative and prophylactic. I can say the same of *counter-irritation*.

Sanitary measures. *Question.*—What would you recommend in the event of any future outbreak of *gootee*?

Answer.—I would rely mainly on sanitary and preventive measures, and secondarily on medical treatment.

Question.—Have you any experience of the sanitary treatment of *gootee*; and if so, what measures have been employed, and with what result?

Answer.—I have had experience of the sanitary treatment of the epizootics which I have witnessed. The first thing I have insisted upon is the separation of sick and sound, isolation of infected villages, and removal of healthy cattle. I have then insisted upon the utmost cleanliness of both sheds and animals, sulphur fumigation, and disinfection by chloride of lime and carbolic acid, burial of carcasses with hides scored, and burning of litter, manure, &c. I have been thus able to check the spread of the disease and limit it to the affected village. I have done this in all the places I have been at, and when my instructions have been carefully carried out, the result was always satisfactory. I experienced great difficulty in getting these instructions carried out, owing to the apathy and prejudices of the inhabitants, especially in Assam; and unless the Legislature interferes, I have no hopes of the inhabitants of Bengal spontaneously adopting any sanitary or preventive measures.

Other animals. *Question.*—Have you had any experience of animals other than cattle being affected by *gootee*?

Answer.—I have found and dissected the carcass of a wild buffalo, and proved that it had died of *gootee*. This was near the road side on the Doderali, as I was travelling from Nafuk to Seebsaugor on the 28th of December 1869. Disease prevailed in the vicinity among tame animals. I have also seen a tame deer belonging to a native between Seebsaugor and Nazeerah affected with the disease. It died, and I examined it; I found the same appearance as I am familiar with in *gootee*. I have heard, but not seen, that wild boars, tigers, pigs, and jackals have been affected and died of *gootee*. I have seen it in a tame pig in Sutrajeetpore. The animal had diarrhœa and a cutaneous eruption.

Infection of man. *Question.*—Have you known of a case of a human being being affected with *gootee* by contagion?

Answer.—One of my Salootries in Jessore in making a *post-mortem* examination accidentally cut his finger. He fevered a few days afterwards, I can't say how many, and his hand and arm swelled and pimples appeared upon them; he lingered on for about a month and eventually recovered. Ulcers formed on the arm; they were small and about quarter of an inch in diameter.

Epidemics and epizootics. *Question.*—Has any epidemic prevailed amongst human beings during the time of the epizootics being prevalent?

Answer.—No epidemics have prevailed during the prevalence of the epizootics of which I have had experience.

ASSAM. H. Farrell, Esq Rain.

Question.—Have you observed that changes of weather, such as heavy rainfalls or extreme heat, have influenced the course of the disease?

Answer.—I have observed that a heavy rainfall checks the disease, but if not sustained, the disease breaks out again. In extreme heat I have found that the disease assumes a milder type, and is more amenable to treatment.

Second attack.

Question.—Have you known of any case in which an animal having survived one attack of *gootee* has ever been again attacked with the same disease?

Answer.—I have known many cases of animals which have had *gootee* suffer from it again when exposed to fresh infection. My impression is that such cases are milder than the first attack. I refer particularly to the village of Binudpore in Jessore. The disease appeared here at the commencement of the outbreak (May) and returned in August. Three animals which had suffered on the first occasion got it on the second occasion and recovered; 24 which also had had the disease did not become affected by the second attack. Animals which had escaped the first time were attacked the second time.

Carbolic acid.

Question.—Will you favor the Commission with any other remarks you may wish to offer?

Answer.—I wish to mention that Mr. Fisher, Manager of the Assam Co.'s Gardens at Nazeerah, near Seebsaugor, treated his garden bullocks (up-country) with carbolic acid 10 drops, and asafœtida solution one ounce, according to my circular issued by Government. Of 21 cases treated on this plan, he only lost one. I saw several of these cattle.

I would also state that up-country bullocks belonging to Planters recover better from the disease than indigenous cattle. I attribute this to their better condition and care.

I would name as persons likely to give information,—Revd. Mr. Higgs, Mr. H. Hannay, Mr. Comber, Mr. Wagentreiber, and Mr. R. Eames.

DURRUNG. J. Lyell, Esq.

Extract from a letter from J. LYELL, Esq., *Tea Planter of Bisnath, to the Deputy Commissioner of Durrung,—dated* 19*th November* 1869.

Treatment.

During last rains the disease was very bad, and some of our imported cattle were attacked, when I adopted the following treatment:—I had the beast tied up in a house by itself and supplied with grass, on which a little water was sprinkled, but allowed no water to be given to drink until symptoms of amendment made their appearance, when I gave a little lukewarm water. As soon as the beast was tied up I gave it half a bottle of brandy or rum, in which half a tolah of opium was dissolved, and if after a few hours no improvement was perceptible, repeated the dose, but gave only about half of the first quantity. Under this treatment every one of the imported cattle that were attacked, perhaps a dozen in all, recovered, but one, and it unfortunately got loose and drank water, when it fell down and died in a short time. An Assamese buffalo recovered under the same treatment.

When the disease attacked my own herd of milch cows, I pursued the same course, but with much less success, the cattle being of the native Assam breed. Of those attacked, about half recovered only; but I am inclined to attribute the cause of so much mortality to a number (nearly all) of those that died being cows heavy in calf. Most of them calved prematurely and then died; but for their having been in this condition, I believe I should have saved a much larger number.

Bengal cattle.

I have been informed by the natives that buffaloes imported from Bengal did not suffer from the disease, and certainly it fell lightly on our imported buffaloes, the above being the only death out of some 120 head I have. Why the disease should have been confined almost entirely to native cattle and buffaloes, is a question worthy of inquiry.

SHILLONG. H. Farrell, Esq.

From H. FARRELL, Esq., *Veterinary Surgeon, on special duty, to the Deputy Commissioner, Khassia and Jyntyah Hills,—dated Shillong, the* 21*st February* 1870.

I have the honor to submit for the information of the Commissioner of Assam a report on the nature of the disease that has appeared among the cattle in the station and vicinity of Shillong.

I arrived in the station on the forenoon of the 19th instant and commenced immediately to make my enquiries. The disease is the ordinary foot and mouth disease of a very mild type. It appeared some fifteen days ago first among some cattle belonging to a Punjabi settler called Heera Sing. As all the cattle are herded together for grazing, and the sick cattle are allowed to mix with the others, the disease was soon communicated and spread all over the station and in a few villages in the immediate neighbourhood.

I have been unable to find out how the disease was first communicated to Heera Sing's cattle, but I have no doubt in my own mind that it must have been imported from below, as it suddenly appeared, ran its course, and gradually died out.

SHILLONG.
H Farrell, Esq.

I have seen twenty-three cases—all convalescents—recovering from the attack, and in all the effect of the disease was very slight,—a few pustules on the tongue, palate and gums, excoriation between the clefts of the hoofs; in others it was noticed round the coronary ridges. In some cases the mouth alone was affected, and the feet escaped. I ascertained that about two-thirds of the cattle in the station and villages were attacked with the disease and recovered with the exception of three,—two cows and a calf; the number of cattle in the station and villages round amounting to some three thousand odd.

I could learn of no fresh cases, and as none had appeared for a week, I can only conclude that the disease has died out and entirely disappeared.

ASSAM.
H. Farrell, Esq.

From H. FARRELL, Esq., *Veterinary Surgeon, on special duty, to the Secretary to the Government of Bengal, Judicial Department,—dated Calcutta, the 2nd April* 1870.

I now do myself the honor to report as briefly as possible the result of my proceedings in Assam in connection with the cattle disease which raged in that province during the past and commencement of the present year. The communication quoted in the margin conveyed the instructions of His Honor the Lieutenant Governor for the investigation, &c. It was evident from the various letters received from the Commissioner of Assam, that the outbreak was causing great mortality amongst the animals and much anxiety to the community, especially to the Government officials and tea planters.

Secretary's letter No. 489T of 25th September 1869.

Route.

2. Assam is not reached with facility or safety except by the route of the river Berhampooter, and by the steamers which move up and down that stream bi-monthly. I made my arrangements to start from Kooshtea by the Steamer *Nepaul* on 15th October, but owing to some disarrangement of her machinery, and the intervention of the Doorga Poojah holidays, she did not start until the close of the month. In the interim, I had procured a passage by the Steamer *Progress*, which, contrary to my expectations, did not start from Kooshtea before the 30th October. I took with me a good stock of medicines, and was accompanied by five good Salootrees.

Serajgunge, &c.

3. It was the 8th November, *i. e.*, nine days, before the steamer reached Gowhatty. During that period there were stoppages at Serajgunge, Kallygunge and Gowalparah, where I made every inquiry regarding the distemper, and found that it did not then exist at any of these places; but that it had appeared in the early part of the year to some extent, and was well known as an occasional visitant for numbers of years previously.

Gowhatty.

4. As before stated, the steamer reached Gowhatty on the 8th November, when I reported my arrival to the Commissioner, and was informed by that officer's Personal Assistant that I had better proceed to Debrooghur, Luckimpore District, where the disease was more prevalent than in any other part of the province. At Gowhatty I found that the most stringent sanitary and preventive measures had been taken by the civil authorities, under instructions from His Honor the Lieutenant Governor. Dr. Purves, the Civil Surgeon of the place, had reported on the outbreak, and had afforded very valuable advice to the authorities.

5. My chief duties were therefore, as directed by the Lieutenant Governor, to obtain ar intimate a knowledge as possible of the nature and symptoms of the disease by close personal inquiry and observation. Before leaving Gowhatty I placed at the orders of the Deputy Commissioner two Salootrees with a quantity of medicine, in case any necessity should arise for their services in the district. I was fortunately enabled to proceed to Debrooghur in the Steamer *Progress*, in which I had arrived at Gowhatty. On the way the steamer stopped a short time at each of the following places:—Mungledye, Tezpore, Koliabar, Bishnath, Kokeelah Mookh and Dekho Mookh; but the stay was so short that I could not obtain any information except at Tezpore, where, I was informed, the distemper was then raging in the district, and that preventive measures had been adopted under the orders of the civil authorities as far as possible.

Debrooghur.

6. My arrival at Debrooghur on 18th November was duly reported to the Deputy Commissioner, and I commenced the required investigation. I found that the military had also been very active in their measures for preventing the spread of the rinderpest, and for cleanliness and the separation of diseased from sound animals, &c., &c., and I cannot do better than submit in original a memorandum* on the subject, received from the Station Staff Officer, Captain FitzG. Cologan, which gives full particulars of the proceedings in cantonments under the orders of Colonel Thomson, commanding.

* Dated Debrooghur, 20th November 1869.

Origin of disease.

7. The disease was first observed about the middle of May, a sepoy having brought a few cows into the station from Golaghat, an infected district, some seven or eight days' march from Debrooghur. About that time there were in possession of the inhabitants of cantonments, Europeans, sepoys, hospital establishments, &c., about 958 head of cattle, of which 614 head died by the middle of November. During my stay at the place I visited every quarter of the station and neighbourhood, giving such advice and assistance as was in my power. I witnessed the good effects of the admirable arrangements made by the civil and military authorities. Notwithstanding a great mortality ensued, not only in the station, as shown above, but in the

neighbouring villages, the inhabitants of which commenced driving their sick animals into the station to save themselves the trouble of burying and removing the carcasses. Elephants were much employed in this latter work at first, but the mortality continued so great for a month or more, that burying the animals had to be given up, and their removal to the centre of the river by rafts or canoes became necessary. Removal of dead.

8. Some time in August, cattle that had been removed across the river were allowed to return to the station, the distemper having apparently disappeared. As an instance of how it is disseminated from village to village and district to district, and what little precaution or forethought is exercised by the owners of cattle, I will relate an occurrence that came under my personal observation in Debrooghur. A villager reported to me that one of his buffaloes was sick at a village three miles across the river; I visited the place, and discovered that the animal was suffering from rinderpest, and that there was no other animal in the place affected then, or for some time previously, from which I was induced to make inquiries regarding the particular buffalo, and found that the villager had recently purchased it from a herd of five brought from Seebsaugor. Although he knew the disease was in that district, he excused himself by stating that the animals were all apparently in a healthy condition; however, the animal died, and affected others in the villages and neighbourhood. On my return to the station from the village, I sought out the remaining four buffaloes of the herd, to see whether the man's story was truthful, and fortunately found that the animals were not affected, on which I took measures to have them well looked after and prevented from leaving their shed; yet within a week three died and one was abstracted. Dissemination of disease.

9. In the course of my inquiries regarding Seebsaugor, where the murrain was very prevalent and mortal, I learnt that cattle owners were in the habit of clandestinely removing all the animals they could remove to Debrooghur for sale, and that cattle from Debrooghur were sent to the other side of the river to the churs to graze, on which I suggested to the civil and military authorities that animals should be prevented from crossing and from entering the station at all, unless their healthy condition was beyond question. By placing a police guard at the Dehing Ghat on the Borally, it would command the Seebsaugor and Debrooghur Districts. The suggestion was acted on. Police were likewise placed at the outlets of the station for a similar purpose. Sale of diseased stock.

10. The Deputy Commissioner, Captain Gregory, having gone to Suddya, I made arrangements to follow him and to visit the several tea planters on the way, in view to collect such information from them as I could obtain on the subject of my general inquiries.

11. At *Lohal* I met Mr. N. White, whose plantation is on the borders of the Madarkhat, a large tract of country inhabited by the Muttacks, a stubborn, prejudiced race, who resisted all attempts to be assisted or advised in the matter of the cattle. The disease was very bad at the place and neighbourhood, and had continued for a long time with much loss; and I left two Salootrees with medicine to render such assistance as would be accepted. Mr. White most kindly promised them every help while they remained. Lohal.

11½. *Chubnah* is the residence and plantation of Mr. Deacon. There was no disease prevailing at the time of my visit, but that gentleman informed me that it had been very bad at the commencement of the year, attended by the loss of much cattle. Chubnah.

12. *Doom-Dooma, Mr. Wanent's Plantation.*—Here also there was no disease at the time of my visit, but it had appeared slightly at an earlier period of the year. Doom-Dooma.

13. *Suddya* is an outpost occupied by two companies of the 42nd Assam Light Infantry with its followers. There was no disease at the period of my visit, but the outbreak is not unknown, having visited the place some years back. Here I had a long conversation with Captain Gregory, the Deputy Commissioner, who gave me valuable advice on my movements, together with the information he had collected regarding the disease and its ravages. Suddya.

14. I returned to Debrooghur by boat down the Berhampooter, and on the way visited several Kampti villages which were free from disease at the time; but the inhabitants informed me that it had prevailed during the early part of the year, and carried off much cattle.

15. From Debrooghur I proceeded to Seebsaugor, and on my way visited the Raj Mai tea garden, where Mr. Inglis resides. I learn from that gentleman that the disease had just appeared in and around the plantation; I therefore inspected many infected cases, and gave such assistance and advice as appeared necessary for the treatment of the animals.

16. *Seebsaugor.*—I found that the Deputy Commissioner, Captain Campbell, was in the district; I accordingly addressed myself to his Assistant, Lieutenant LaTouche, who informed me that the rinderpest was very prevalent in the station, bazaar, and throughout the whole district; every measure possible to take had been taken for sanitary purposes and for preventing the spread of the distemper. A large, dry and airy shed was set apart for an hospital, and the people were cordially invited to send their sick cattle to it, with intimation that careful arrangements had been made for the treatment of infected animals. I also tendered such advice and assistance as appeared necessary. Seebsaugor. Hospital.

17. The Revd. A. Cloike, of the American Mission, took a lively and active interest in the rinderpest, of which he has some knowledge; his attention was of course principally given

ASSAM.
H. Farrell, Esq.

to the cattle of the Native Christians, and those in the Mission compound, where the distemper was raging very badly. It is before mentioned that the Muttacks of the Madarkhat resisted all attempts to give them assistance or advice in the management of their sick cattle, but I regret to record that the resistance has been general throughout the province, with very few exceptions. At first it was partial, but when it became known that a Government officer was deputed to examine into and treat the disease, the people positively refused to let myself or Salootrees render any assistance, however small, stating that if English medicines were used their deity would, as a punishment, destroy all the cattle.

Opposition.

18. Meetings were held to invoke their deity against English treatment, and, what is most singular and extraordinary, well-to-do and well-informed natives were foremost and prominent in their objections and in raising an outcry against interference. A Native Inspector of Police, who can speak English fluently, declared in open court, when questioned by Lieutenant LaTouche whether I would be permitted to attend his cattle, that he would not allow me to treat them or go near them for fear of the vengeance of their "deity;" and again, intelligent natives, attached to the American Mission for fourteen or sixteen years, went with folded hands to their pastor, and begged him to prevent English treatment being adopted, as they had attended the general meeting, and were, in common with their fellow-countrymen, dreadfully afraid of their deity's vengeance overtaking them if they accepted the slightest assistance from the doctor sahib. In this state of affairs I was quite unable to take any very active part in the case of sick animals; but I can declare that every help that could possibly be given was afforded by the civil authorities, including the Police; yet cure was a failure, and cleanliness and attention to the cattle not willingly observed.

Nazeerah.

19. From Seebsaugor I proceeded to *Nazeerah*, about eight miles distant, to meet the Deputy Commissioner. Nazeerah is the head-quarters of the Assam Tea Company, of which Mr. Fisher is the head superintendent. The disease was raging in and about the Company's plantations at the time of my visit, and it had been very bad for a good while previously, with much mortality. Owing, however, to the energy and activity of Mr. Fisher and his assistants, who, acting on the warning and advice given in my circular issued under the authority of His Honor the Lieutenant Governor, had sheds erected for the sick cattle, personally superintended their treatment, using largely carbolic acid and sulphur fumigation, had the cattle separated and distributed in the most healthy places, carried out sanitary arrangements which were most useful, and in fact exerted himself so earnestly and intelligently that a good many of the infected cases recovered in a wonderful manner, considering the fatality usually attending the distemper, the total destruction of the cattle in the several plantations was averted.

Sanitary measures.

Up-country cattle.

20. It was observable at this and other places that the large up-country bullocks seized with rinderpest usually recovered, their great strength and stamina enabling them to resist the attack successfully; thus proving that improvement in the breed of cattle, and in the quality of those imported, would be one of the best preventive measures. In this Mr. Fisher and other planters entirely coincide; indeed they go so far as to consider it the first step in prevention; but of this more anon. It is also singular that the buffaloes on this estate and elsewhere rarely recovered when attacked, and that many other animals fell victims—pigs, goats, sheep, deer, and wild buffaloes.

21. After a stay of three days at Nazeerah, during which time I consulted and advised with Mr. Fisher and other inhabitants, I started by the Doodurali to visit the gardens along that road, intending to move on to Tezpore. The gardens Dhole Bagan, Cherided and Singabar are within a few miles of each other, and belong to the Assam Tea Company; the disease had appeared slightly at each of the places, but it was kept down by the assistants under the vigorous arrangements of Mr. Fisher.

Obhoypore.

22. *Obhoypore*, the plantation of Mr. Adams, had entirely escaped from the distemper, although unusual precautions had not been taken to prevent its appearance, and very strange.

Sonaree.

23. At *Sonaree*, two miles further on, Mr. Wagentreiber, the manager of the plantation, had lost all his cows and bullocks, about thirty in number. He had purchased a herd of goats at Seebsaugor, among which the distemper first appeared, carrying all off; the cattle were next affected, and died off. Between this place and Obhoypore I was delayed by my elephant running away and not returning, and as it was impossible to proceed without an elephant, I was obliged to return to Nazeerah to procure another, which caused me to make arrangements for proceeding among the Seoneeali and visit Jorehat instead of Tezpore.

Tehok.

24. *Tehok*.—Here I met Mr. Mawson, the manager of the tea plantation, and learnt that the distemper was not raging at the time, but that it had appeared in a slight manner some time previously, and was well known as a visitor of former years.

Jorehat.

25. *Jorehat*.—Here I met Captain Blathwayt, Deputy Commissioner, from Golaghat, and learnt that the rinderpest had disappeared to a great extent in and around the place, and that there was not much use in my proceeding there. At Jorehat there was no disease at the period of my visit, but it had been very bad previously. A dozen or more planters had just assembled for their annual meeting, races, &c., &c., and I had a good opportunity of conversing with them. They were unanimously of opinion that the precautions taken by them in the matter of the rinderpest were in a great measure rendered nugatory by the action of

the inhabitants who resided around them and in their neighbourhood. They are described as thoroughly apathetic and careless, and utterly indifferent in taking measures for the spread of the infection. On the contrary, their manner of purchasing animals, and sending them from one place to another, is a main cause of outbreaks and mortality.

Cinnomara. 26. From Jorehat I proceeded to *Cinnomara*, the head-quarters of the Jorehat Tea Company. Here I had many conversations on the prevailing topic with Mr. Hattman, the manager of the plantation, went round the place with him, and visited all the neighbouring villages, giving such advice as I perceived was necessary. The rinderpest had appeared in them all some time before, but there was no sign of it during my movements. Having heard that the Cattle Plague Commission appointed by the Supreme Government was about visiting the province, I considered it necessary to return to Debrooghur in case my services might be required by the Commission; and as I could be of little further use in the districts, I accordingly retraced my steps *viâ* Seebsaugor, and arrived at the place in the beginning of January.

Resistance. 27. In and around the cantonments and the neighbourhood of Debrooghur the rinderpest was still prevailing to some extent, and the inhabitants were more determined than ever in their resistance to any treatment or advice offered by myself or Salootrees; to which effect I wrote to the Deputy Commissioner, Captain Gregory, and applied to the Commissioner for orders in respect of my future movements. That officer's Personal Assistant instructed me to await the arrival of the Cattle Plague Commission, which I did, and appeared before them on the 25th and 26th January, and was closely examined in connection with the experience I had gained of the rinderpest in the Bengal and Assam Districts I had visited. Having replied to all the queries put to me to the best of my ability, which replies, &c., will doubtless appear in the records of the Commission, and being informed by Mr. Hallen, the President, that he had no orders for me, and did not require my services any further, I made arrangements for returning to Calcutta, but could not leave for many days, there being no steamer or other means of proceeding available.

Shillong. 28. On my return at Gowhatty I was directed by the Commissioner to remain at the place, as my services were likely to be again required by the Cattle Plague Commission to inquire into a distemper that was reported by the Deputy Commissioner, Khassia Hills, to have appeared at Shillong. The Commission came to Gowhatty in due course, and communicated with Colonel Agnew, the Commissioner, on the subject. They agreed that it was very advisable I should proceed to the hills. The necessary official orders were accordingly given to me, and I started for Shillong on the 18th February, and was glad to find, on arrival at that place, that the outbreak was a very mild type of eczema epizootica, or the common foot and mouth disease of horned cattle. There being no further use for my services on the hills, I reported my proceedings to Major Stewart, Deputy Commissioner, and having received his permission, I returned to Gowhatty and proceeded to Calcutta on the first steamer available, the *Burmah*.

Geography of Assam. 29. The nature of a country having so much to do with the breeding, rearing, and use of cattle, &c., &c., perhaps it will not be out of place to say something of Assam as it appeared to me from the river, and during my peregrinations inland the entire length of the place, and inland through many parts of it. The province is an immense valley, hundreds of miles in extent; the length many times greater than the breadth; nearly surrounded by mountains; some of them plainly observable, are among the loftiest in the world, and are covered with perpetual snow; clumps of hills rise in many parts from the level of the valley.

Rivers. Cultivation. 30. The rivers and streams are numerous; the natives reckon above seventy. Vegetation is marvellous, principally forest and jungle; the soil is exceedingly fertile; earthquakes are not uncommon; wild animals of every description abound, and the larger are very destructive to human and to animal life, and to the cultivation of the ryots; the population, mostly Hindoos, is not very numerous, but there are signs of a far greater population, and of wide cultivation in olden times, long before the Burmese conquered and nearly ruined the country. It appears, however, to be steadily regaining its former prosperity under the rule of the British Government, which commenced more than forty years ago.

Tea. 31. Tea cultivation in the province has gained great prominence of late years, and doubtless the money and presence of an intelligent and energetic body of European gentlemen has given great help to the exertions of the Government of Bengal in furtherance of the welfare and prosperity of the province.

Stock. 32. But notwithstanding the great and extraordinary fertility and vegetation of the country, domestic animals—cows, oxen, buffaloes, horses, &c., &c.—are not indigenous to Assam generally. The greater numbers for use are imported from Bengal and Orissa; some are brought from the North-Western Provinces by the planters, of which more hereafter, and most of the buffaloes are a cross between the wild and domestic animals; nor do the miserable looking animals. to be met with almost everywhere, tell in favor of the pasturage, breeding, feeding, or care of the cattle, so that the rapid spread of the rinderpest, when it once gains an entrance into a place or district, is not wonderful.

Pasturage. 33. The pasturage, however, appears to agree with the buffaloes, which are of a far superior description to the other horned cattle. The former chiefly feed on reed grasses, *kugree* and *ikora*, growing in the plains and jungles everywhere throughout the valley.

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ASSAM.

Symptoms.

43. I will commence my general observations by remarking that a detail of the nature, symptoms, and treatment of the epizootic would appear to be unnecessary, as I found the distemper to be rinderpest of similar character to that explained in my two reports on Bengal, and in the circulars widely distributed throughout the districts comprising the Government of Bengal, by orders of His Honor the Lieutenant Governor.

HISTORY.

History.

44. Rinderpest has been known in the Province of Assam for many years previously to the assumption of the Government by the British; the common names are *gootee, burrarog, perangah* and *moier*. The greatest outbreaks appear to occur at intervals of eight and ten years, spreading far and wide, and attended with great mortality. According to many old inhabitants, the country is never free of the disease altogether, for it is to be found more or less in many parts every year. I could find no Government records of these outbreaks, or of the general tradition that the Burmese brought the distemper into Assam in their many aggressive irruptions into the country; but I came across an old Gossain, who produced a book written in the Assamese character, and read from it that in

1818.

the year 1818 the Burmese invaded the country with a large army, and that soon after their arrival in Assam, a *burrarog* broke out amongst the army cattle, and destroyed them all, spread into the country, and committed similar devastation.

Introduction from Burmah.

45. I see no reason to disbelieve the Assamese record, except that the destruction was possibly not so general as stated. It might, therefore, be safely recorded that the rinderpest was introduced into Assam from Burmah. Once introduced, it is but natural to suppose that the virus found a favorable habitation in the low, undrained, marshy soil of Assam, to appear in virulence whenever climatic influence proved favorable to its growth and development. The germs are spread from place to place, now at one part of the country, then at another, from causes which I have endeavoured to explain in other parts of this report, as arising principally from the carelessness, apathy and ignorance of the inhabitants.

Bengal buffaloes.

46. Some think that the rinderpest is periodically introduced by the large herds of bullocks and buffaloes imported from Bengal into Assam, but I do not agree with this opinion, because I believe that the large importation of cattle from Bengal is of comparatively recent occurrence, being coeval with the advent of the tea cultivation, which brought into the province a large number of European gentlemen as settlers and planters, from whom the demand for cattle in any numbers first arose. It is not however unlikely but that the large droves of cattle brought in by the dealers pick up the disease in Lower Assam, from travelling long distances, being out of condition from fatigue and ill-feeding, predisposing them to the poisonous influence of the infection more readily, and carrying it with them through the districts.

MORTALITY.

Mortality.

These figures are entirely from official records.

Kamroop	...	...	...	...	7,234
Durrung	...	...	...	...	1,888
Nowgong	...	...	...	...	5,321
Seebsaugor	...	...	...	...	1,54,531
Luckimpore	...	...	...	...	8,685
			Total	...	1,77,659

Cautions.

47. These figures look marvellous, but must be received with caution on account of the known exaggeration of the ryots and farmers; half or even one quarter of the figures would be nearer the mark. Judging from experience, and looking at the report from the station of Debrooghur, which no doubt records the number of animals actually in possession of each individual at the commencement of the outbreak, and each individual's loss at its close, the manner of recording the number of deaths is not trustworthy; the mouzahdars and police between them report all the casualties, and they are obliged to depend almost entirely on the villagers, who do not scruple to tell untruths when it suits either their interest or purpose. To make any sort of a reliable report, the mouzahdars and police should visit every cattle owner, and have some verification of casualties when the numbers are suspicious; but considering that there are from sixty to seventy, or even more villages in every mouzah, it would take a considerable time to make such visits; but from what I could see and learn, they were not made, but were confined to general enquiries here and there among the villages in some cases, and no enquiries whatever in others—mere imaginary statements.

Exaggerated accounts.

48. In illustration I will mention that, on one occasion at Debrooghur, the police reported that the mortality was alarming in the Jumeera Patar, some six miles from the station, the deaths being at the rate of ninety per diem. The report came to me officially, when I at once proceeded to the Patar, and inspected every village named in the report, but, to my astonishment, there was no distemper prevailing. On my reporting the circumstance to the Deputy Commissioner, it appeared so strange to that officer that he visited the villages in my company and that of the police functionary who made the report. To

our great surprise the man did not even know the villages, nor had he any knowledge of the distemper; and, as I had stated, there was no sickness, no carcasses, or signs of burial; there were a few skeletons, but so bleached by exposure that it was impossible to decide how long they had been on the ground where they lay.

49. It appears that the over-zealous policeman had collected the names of a certain number of villages, filled in fancy numbers opposite each, and submitted the document as a reliable report. Such a circumstance as this just narrated causes suspicion to attach to almost every report. Reports cannot very well be verified, unless by a public annual record of every animal in possession of the inhabitants of each village, similar to that taken in the cantonments at Debrooghur. I attempted to take such a census at one or two places to prove the mortality, but I failed entirely. In another instance a mouzahdar from Golaghat reported that in his mouzah a crow, a snake, and an eagle had died of the disease; this man is either a wit or a cynic.

Crops.

50. It is satisfactory to know that the great loss of cattle reported is almost counterbalanced by the abundant rice crop of the year, more fruitful than known for many years. It was most fortunate that the ploughing was nearly over, and the seed in the ground, before the worst of the outbreak occurred.

Number of cattle.

51. The cattle in the valley appeared to me to be very numerous at all places and periods of my visits. From enquiry regarding certain families of Assamese and herds of cattle, I calculated that for every adult in the country there were fifteen head of cattle at least before the outbreak; yet the loss, to my observation, had not very much diminished the numbers. They appeared to be kept more for show than use. A very small number is engaged in ploughing, none in draught, except by Europeans, chiefly the planters, who generally suffered severely from the rinderpest; indeed, it was only their energy and intelligence that saved the remnants. The cows are not used for dairy purposes by the Assamese, yet the herds are numerous. The larger the herd, of more consequence is the owner; the cattle are never housed, but are allowed to wander wherever they like, and to pick up what food they can, until the sowing season, when they are collected and kept in the neighbourhood of villages until the harvest is over, when they are again allowed to wander. They are also allowed to breed and propagate indiscriminately. Many owners do not know the number of their herds or of their losses; they do not export cattle. When in want of money, one or more bulls are taken from the herd, castrated, and sold for whatever is offered for them. The hides are not used nor exported.

Milk.

52. The hill tribes, Nagas, Abors, and others, eat the flesh of the ox, but will on no account drink the milk of the cow, as they consider it an excretion of the animal; they however kill it for sacrificial purposes.

Prevention and Cure.

Sanitary measures.

53. Sanitary and remedial measures are, if possible, more required in Assam than in Lower Bengal. It has been shown that the former may be enforced at least partially, but for the latter the inhabitants are not yet prepared, although many of them well understand the success of the planters in the treatment of their cattle, which are chiefly of the superior breed brought from the North-Western Provinces. The cattle of the country are a miserably weak, degenerate race of animals, brought to their present miserable condition by indiscriminate breeding in and in, and by the utter want of care on the part of the owners. The bulls are too numerous, and being principally young animals, the breed suffers. Accordingly, they are never castrated until two or three years old, and then only as a matter of necessity, to sell them for money when much wanted; nor are bulls ever killed for food or sacrificial purposes.

Improvement of breed.

54. It will then be observed that one of the most important measures for eradicating disease would be improvement in the breed of the Assam cattle. For this purpose I would suggest a tax on all bulls above six months old, and in excess of the number required for each herd of cattle, which is about one in ten; and the importation of a superior breed of bulls from Upper India by the Government, for distribution throughout the country, in charge of officials and of the planters, who, I am certain, would willingly afford their cordial assistance. The services of the animals might be given gratis for at least three years, by which time I am convinced that so much good would arise that even the eyes of the Assamese would be opened to the advantage of having superior animals for the market and for use, and they would become importers themselves, and take more interest in the case of their cattle than they do at present.

55. No great expense would attend the purchase and removal to Assam of the animals; they could be picked up and carefully selected at small cost at the proper fairs and breeding districts of Upper and Central India; the planters and owners of large herds would feed the bulls in return for their services.

Legal measures.

56. Sanitary and remedial measures could be enforced by law, but perhaps it would be preferable to gradually introduce them by persuasion and example when outbreaks occur. The establishment of temporary hospitals at central parts, for the reception of infected animals, would probably in time be attended with great advantage, when the natives become

ASSAM. more accustomed to receive assistance. Salootree can treat cattle very well, agreeably to the instructions contained in the circulars on the subject, when taught and supplied with the proper remedies, and when duly controlled.

Quarantine, &c. 57. Future outbreaks might be looked after by having a separate body of men selected from the police in the first instance, appointed for quarantine, segregation, sanitary, and similar duties, with necessary powers for action. The police allotted for ordinary duties have too much to do to be able to give material assistance, or to be ready to afford help or advice when epizootics suddenly appear; moreover, they have not the necessary training, and are ignorant of the steps to be taken on such occasions.

Special agency. 58. Perhaps it would be possible to collect such a body in Calcutta, in addition to the Salootrees that may be maintained, not exceeding fifty in number, to be under proper control, for the purpose of being trained and kept ready for despatch to infected districts to carry out quarantine and sanitary arrangements, and with means at their command to give medicine, &c., whenever necessary. This might be done with very little additional cost, by choosing one or two men from each police district: they could probably be spared without inconvenience or without replacing them. The suggestion appears feasible to me, but if not so to the authorities, it may be the means of prompting a better arrangement that would answer the purpose required.

59. Finally, I have much pleasure in noticing the very cordial and valuable assistance received by me from all the civil and military officers stationed throughout the country, and from the planters of every tea plantation visited in my tour. Personally, I had a good many difficulties to contend with from repeated attacks of (malaria) fever, which first assailed me in 1868 in the Diamond Harbour District, and which is not yet eradicated from my system; and from the perplexity and unusual expense attending the maintenance of one elephant and three ponies for baggage and conveyance from one part of the country to another. Travelling through many parts of the province, from almost impassable roads, is anything but pleasant, and at some places shelter is of the vilest description, so that I found it impossible to keep up the complete diary contemplated when I set out on the journey; consequently this report fails in many particulars which I would have brought forward under more favorable circumstances; but I have endeavoured to set forth truthfully what came under my personal observation.

DEBROOGHUR. *Memorandum of measures taken during the prevalence of the cattle epidemic in Debrooghur Cantonments for the preservation of the health of the troops in Garrison,—dated Debrooghur, the 20th November* 1869.

Importation of disease. In the beginning of May, Private Roop Narain Singh, 8th Company, Her Majesty's 42nd Regiment Assam Light Infantry, obtained a few days' leave to proceed to Golaghat to bring up some cows which had been given him by the father of a young woman whom he had taken into his keeping. He rejoined head-quarters, Debrooghur, about the 16th May 1869, and brought five cows with him, all apparently healthy.* At the latter end of May one of the cows began to sicken, and this coming to the knowledge of the Havildar Major, he told the man to take his cows across the river and isolate them. The animal had a running from the eyes, and a little from the nostrils, ears sunk, and slight diarrhœa. It died within three or four days of its attack. About the same time a cow, belonging to Private Gopie Misir, also of the 8th Company, 42nd Regiment Assam Light Infantry, was taken ill and died. About the beginning of June —the exact date not being ascertainable owing to the death of the owner of the cow—a third cow died, and a number of cattle began to show symptoms of sickness, but no deaths took place till the 28th June 1869, when the disease assumed a virulent form, the deaths in the interim being as per margin. On the 25th June the Superintendent of Police stated that he had heard the disease was in cantonments, and requested permission to ascertain the number of deaths that had taken place. On the morning of the 27th he brought to Colonel Thomson's notice that 19 cows had died the previous day. This was an error in the chowdhry's report to the police, for 19 deaths during the month, 19, the previous day's mortality, had been recorded. Dr. White coming to the Commanding Officer's house at the same time, Colonel Thomson asked him to examine the cattle in conjunction with the Station Staff Officer and the Superintendent of Police, and let him know what steps he would advise being taken. The three officers then proceeded to the regiment at bazaar and inspected the cattle passing from the cattle lines to the chur across the river to graze. Some 10 or 12 cows were declared by Dr. White to be suffering from pleuro-pneumonia, and at his recommendation they were at once isolated. On the 28th June, when the Station Staff Officer was going round cantonments, he found in the cattle lines a large number of sick cattle, all suffering with similar symptoms: foaming at the mouth, depression, and violent purging. By noon a number had died, some 10 or 12, and it became apparent that the disease was about to assume a virulent form. The matter was reported to the Officer Commanding, who ordered the Staff Officer to proceed at

* This after a march of eight days.

	Cows died.
16th June	3
18th „	3
19th „	1
21st „	2
22nd „	3
23rd „	3
25th „	1
26th „	4
27th „	2
Total ...	22

once and see Dr. White, and ask his advice thereon. Dr. White recommended the immediate removal of all cattle from cantonments, and the isolation of the sick cattle. The Staff Officer was also sent to consult the Deputy Commissioner and Superintendent of Police, with a view to mutual co-operation in carrying out sanitary measures. The accompanying extract of station orders issued by Colonel Thomson will show the measures adopted in cantonments, and which were enforced most strictly. Three or four cases did occur of infringement of the regulations drawn up, and the owners in all cases met with severe punishment. DEBROOGHUR. Measures adopted.

The number of cattle that died on the 28th June amounted to 26 head, and 30 died on the 29th.

On the morning of the 30th June all cattle in cantonments, under a strong guard of one Havildar, two Naiks, and 18 Privates of the 42nd Regiment Assam Light Infantry, were collected and moved out of cantonments, a European Officer being specially detailed to see them taken away, and the measures directed in regimental orders of the 29th June duly carried out. The intention was to get the cattle on to a high chur of the Berhampooter, near the Mohona Mookh, but owing to the river having suddenly risen very high, the cattle could only be got on to a chur by the Mekla, and there they remained till the disease died out.

At first the cattle in cantonments were buried in pits, dug by the conservancy and regimental establishments; the carcasses were covered with lime and a layer of charcoal previous to the earth being thrown in to fill up the pits. But this, being in the height of the rains, and whilst the river was at his highest flood, had to be given up, water being found within three or four feet of the surface, and stopping all digging operations. Many blind wells also served for the purpose of burying the cattle in, all carcasses being well covered with layers of lime and charcoal before being finally covered over with earth. The regimental elephants were employed to go about cantonments and its vicinity, and drag away the carcasses of cattle that had died, the moment information of the death was given. The regimental sweepers were used for the purpose of tying the cattle to the ropes suspended from the bodies of the elephants for dragging purposes. Disposal of dead.

When it was found impossible to any longer bury the cattle, *mars, i.e.*, two canoes joined together with a bamboo platform, were employed to receive the cattle collected at the bazaar ghat, between the military cantonments and the civil lines, drop down to the junction of the Mekla with the Berhampooter at the Mohona Mookh, and throw all the carcasses into the river. At this time, beginning of July, the average number of deaths amounted to about 70 head per diem, including the civil station, so that removal* to the Mohona was the only measure available, it being quite impossible to dig pits either deep or quick enough to bury cattle. Every portion of cantonments was visited several times a day by the Station Staff Officer, and every measure taken to preserve health in cantonments. Colonel Thomson's orders were imperative, to spare no pains or expense to preserve proper sanitation, and this was done, and every farthing in hand of the cantonment fund was expended in this way. Men had to be paid for working over hours, lime and charcoal to be bought at a time when it was most expensive, bamboos, &c., to be provided for the *mars*. This had the effect of saving the cantonment from cholera, whilst in the district and the civil station, I am told, it was quite epidemic. In cantonments two or three sporadic cases occurred, but nothing in the shape of an epidemic took place. Numbers of cows died in cantonments, which were not the property of any resident, they having been driven in by the owners and left to die there, to save themselves from having to adopt measures to remove the carcasses, which of course, being instantly removed, prevented any contamination of the atmosphere.

* This measure was recommended by the Deputy Commissioner and Medical Officer.

In conclusion, I would observe that almost every cow attacked by the disease died. To my knowledge two only escaped, one in my own compound, belonging to Captain Nowell, and treated by Dr. White, and another in the lines. The animals, when in a state of convalescence, had their bodies covered with spots like cow-pox, and when rid of this, they got worms in the ears and posterior, immediately under the tail. Except the cow treated by Dr. White, I know of no other attempt to cure being made, every animal dying within 12 or 14 hours of its being attacked. Those I saw ill, all appeared to suffer greatly from thirst, to allay which they dragged themselves to pools of water, and even to the river side. The cattle were allowed to return to cantonments on the 8th August 1869, though for the previous ten days no animal had died. Mortality.

Extract of Station Orders issued by LIEUTENANT-COLONEL M. THOMSON, *Commanding 42nd Regiment Assam Light Infantry.*—(*No.* 101, *dated Debrooghur, the 28th June* 1869.) Lieutenant-Colonel M. Thomson.

Consequent on an epidemic having broken out among the cattle, both in cantonments and in the civil lines, the Officer Commanding, in conjunction with the civil authorities, has been pleased to order the adoption of the following sanitary measures:—

1*st.*—All cattle, on being attacked by this disease, must at once be sent across the river to the Berhampooter chur, beyond the Mekla river. A *mar* will be placed there to help cattle across.

DEBROOGHUR. Station Orders.

Any sick cattle found in cantonments will be confiscated, and the owners fined under the provisions of Act XXII of 1864.

2nd.—On the occasion of any cattle dying in cantonments, instant intimation to be given to the Station Staff Officer or to the Bazaar Chowdry, when measures will at once be adopted for the disposal of the carcasses.

3rd.—The Officer Commanding 42nd Regiment Assam Light Infantry will daily place at the disposal of the Station Staff Officer one elephant and all the regimental classies and sweepers for the purpose of carrying the carcasses of deceased cattle out of the station and having them buried.

4th.—Owners of cattle voluntarily allowing their cattle to die in cantonments, or in the civil station, and adopting no measures to ensure the speedy disposal of the carcasses, will be prosecuted under Section 268 of the Indian Penal Code.

5th.—In the course of a day or two a *mar*, bearing the quarantine flag (yellow), will, under the orders of the Police Officer of the District, patrol the river, receive over all carcasses, and carry them to the Berhampooter, where they will be thrown into the river.

6th.—The co-operation of the residents of cantonments is invited in carrying out these measures. Any one seeing dead cattle about cantonments is invited to make the same known to the Station Staff Officer or Bazaar Chowdry, in order that steps be at once taken for the removal of the carcasses.

Extract of Regimental Orders issued by LIEUTENANT-COLONEL M. THOMSON, *Commanding 42nd Regiment Assam Light Infantry,*—(*No.* 307, *dated Debrooghur, the 29th June* 1869.)

The whole of the cows belonging to the men in the regiment will be sent at early dawn to-morrow to the Mohona Mookh, under charge of a guard consisting of one Havildar, one Naik, one Lance Naik, and 18 Privates, and no cattle belonging to the regiment will on any pretext whatever be allowed to enter cantonments until the present cattle epidemic has ceased. The guard going down to the Mohona Mookh must be prepared to hut itself there.

The Officer Commanding is pleased to direct Lieutenant F. H. Alexander to go down to-morrow to the Mohona Mookh, and see that the guard huts itself properly, and that all diseased cattle are kept separate from those in health, and on his return Lieutenant Alexander will duly report that this has been done.

[For Abstract Return of stock and losses, see Appendix No. 3.]

J. B. White, Esq.

From J. B. WHITE, Esq., F. R. C. S., *Assistant Surgeon, in Medical charge of Troops and Civil Station, Debrooghur, to the Deputy Commissioner, Debrooghur,*—(*No.* 70, *dated Debrooghur, the 2nd October* 1869.)

Carbolic acid.

With reference to your demi-official of the 2nd ultimo, forwarding printed papers from Government regarding the treatment of cattle disease by carbolic acid, I have the honor to report that I have used it in ten cases of the epizootic within the last month. Of the number so treated four recovered and six died.

Result of trial.

I am not, however, inclined to attach much importance to this trial. During the past six weeks the disease has not only abated in the numbers attacked, but also very much in virulence of type; many cattle have recovered lately without any treatment whatever; whereas during the early period of the outbreak none recovered without treatment, and few under the most favorable circumstances; moreover the plague which has recently visited this district is undoubtedly the true rinderpest, and in Europe in the treatment of this disease carbolic acid has been largely used, and with the best opportunities for watching its effects: the results, as I learn from the scientific journals, are not such as to justify its being regarded in any measure as a specific.

Memorandum by J. B. WHITE, Esq., F. R. C. S., *Assistant Surgeon, 42nd Regiment Assam Light Infantry, and Civil Establishments, to the Deputy Commissioner of Luckhimpore,*—(*No.* 2, *dated Debrooghur, the 11th January* 1870.)

In continuation of my letter No. 70 of the 2nd October last, I have the honor to report that since that date I have used carbolic acid in the treatment of the cattle plague (rinderpest) now raging in this district in 37 cases; of this number 26 died and 11 recovered. As the disease has not been for the past few months within easy reach of the station, I was unable to watch the effects of the remedy myself, and have to trust to the reports of a rather ignorant dispenser and the owners of the cattle.

DEBROOGHUR.

So far as I can gather from their statements, the acid has a marked effect in diminishing the fœtor of the discharges and breath, which is such a marked symptom of the diseases. Effect of carbolic acid.

I would have continued further experiments with the remedy, but the arrival of Veterinary Surgeon Farrell at this station on the 18th November I conceived relieved me from this duty.

I have only to reiterate what I stated in my former letter, that I do not believe that it will prove a specific, nor indeed more than an antiputrifactive adjunct to other remedies.

ASSAM.

Evidence of J. B. WHITE, Esq., F. R. C. S., *Assistant Surgeon, 42nd Regiment, Assam Light Infantry, recorded 11th February* 1870. J. B. White, Esq.

I have resided at Debrooghur during the past 12 years. The surrounding country is an alluvial or delta formation up to the foot of the hills. I should say that there are from 4 to 5 head of cattle to each house. Locality. The different breeds of cattle in the district are, 1*st*, native; 2*nd*, a few imported cattle; 3*rd*, buffaloes, the stock of which is mainly kept up by wild bulls. Breeds. This accounts for buffaloes not having deteriorated in quality, which the cattle have. Bullocks and cows are worth now from 10 to 12 rupees per head. Ten years ago the price was probably 40 per cent. less. Price. Male buffaloes are at present worth 32 rupees and females 80 rupees. Ten years ago these were worth half that amount. Cattle are employed for agricultural purposes from June to August, and again in the cold weather from September to December. Both bullocks and cows are used for agricultural purposes. Uses of cattle. There are very few carts in the district, but they are greatly on the increase in the neighbourhood of stations. Bullocks are not used for pack purposes; buffaloes are used for ploughing. Cattle are let loose to find their own food, and as a rule are not housed. Housing. There are about, on an average, two milch cows to each house in the district generally, but in the neighbourhood of large stations dairies are kept up containing from 40 to 200 cows. One-third of the cattle are used for dairy purposes, one-third for agriculture, and one-third constitutes a kind of investment, representing so much property; a man's social position being, as it were, determined by the number of cattle which he keeps. The mode of housing cattle varies; it chiefly consists of sheds which are as good as the owner's house; but the greater part of the agricultural cattle are not shedded at all. Sheds. They are let loose on the large *pittars* (rice fields) when the crop has been removed, and remain there during the non-agricultural season. A cow-shed is generally raised a little, and has a thatched roof and walls made of bamboo matting; the cattle are, as a rule, allowed to feed themselves; Feeding. sometimes rice chaff in small quantities is given to them. They are driven to water at neighbouring streams or jheels. The grasses on which cattle feed are called by the natives *doop*, *ooloo*, and others; but during the cold weather they feed upon the rice straw, which is left in root on the fields, and during this season they improve in condition.

I have never known of cattle being herded and driven to a distance of more than 10 miles for grazing purposes.

Cattle are herded both by day and night in the non-working season in the large *pittars*, where they are congregated from the villages for miles round; also buffaloes, which are driven there for grazing, and also for the purpose of having them covered by the wild bulls. Herding. I know of no other herding except near the large stations, where they are obliged to be herded so as to prevent trespass.

Question.—Is grazing ground in the vicinity of a village or station, or in the instance of a large *pittar*, considered common? Common pasture.

Answer.—Yes, it is; for example the Kamiani *pittar* in the vicinity of Hurbath, on which 10,000 cattle might be seen at one time.

Cattle have greatly degenerated with regard to breed, and are badly nourished with regard to condition. Condition.

The stock is kept up—

1*st.*—By breeding; no special bulls are kept; the cattle are allowed to go about indiscriminately, the consequence of which is that when a cow comes on bulling, she is generally followed about by 10 or 12 young half-grown bulls, owing to the custom which prevails of not gelding the male animals till they are two or three years old. Breeding. There is hardly such a thing as a full-grown vigorous bull, hence the deterioration in the stock.

2*nd.*—Importation is very small indeed, in fact need not be noticed. Some buffaloes are imported from Bengal; these are generally female buffaloes. Importation.

There are no hâts or markets for cattle. Sales are generally made by private transactions. Markets.

There is no export of cattle from the district.

A small trade in hides has sprung up here within the last three or four years, within which time two or three Dacca merchants have taken it up and give the Chamars from Re. 0-8 to Re. 1-8 a hide. Hide trade. I do not know whether the Chamars take advances or not, but I fancy they do. These Chamars are, for the most part, time-expired coolies of the different factories.

ASSAM.
J. B. White, Esq.
Mortality.

The mortality ordinarily, owing to the little care that is taken of cattle, I should think, has been 10 to 12 per cent. per annum. It has been about 40 per cent. in those mouzahs visited by the disease.

History.

The first recorded attack of murrain is the one of 1853, which has been fully reported on by Drs. Maclean and Long. The next was a partial outbreak in 1861 of a disease identical with the present one, but not so virulent in type. There have been other circumscribed outbreaks of disease in different localities in Upper Assam, but I cannot tell the nature of them. I should think that they were nearly of yearly occurrence.

Question.—Do you think that these local outbreaks, of which you speak as occurring between 1861 and 1869, were of the same nature as the present one?

Nature of disease.

Answer.—Yes, I think that they were; the disease is a contagious epizootic. The source and cause are unknown; the mode of spread is contagion.

Question.—Does the disease appear simultaneously over a large tract of country, or does it spread from village to village?

Answer.—You can generally trace its course.

Origin of disease.

Question.—You say that the disease has been almost of annual occurrence since 1861. Under these circumstances, do you look for it as indigenous to the province or to have been annually imported?

Answer.—I think it was originally imported, but for the last 17 years I look upon it as endemic or indigenous.

Question.—Then do you consider the originally imported germ or cause of the disease, whatever that may be, to be from time to time revivified, or that the disease sprang up *de novo*?

Answer.—I think that the germ originally imported is from time to time revivified from conditions of climate and soil.

Question.—Then you do not believe that this province has the power of producing this disease in the same way as the Russian steppes have of producing rinderpest?

Answer.—I do not think so. In confirmation of this opinion, I would mention that during my residence the disease has never been known in Suddya, which is an isolated spot.

Season.

Plagues generally first appear in May to August, the same months in which cholera prevails among men; but after the first outbreak they are unaffected by any change in the seasons.

Foot and mouth disease.

In the cold weather we have the foot and mouth disease yearly, which disease lasts four or five weeks.

Statistics.

As regards statistics, I can only speak of the present plague.

The proportion attacked was about 60 per cent. of those under my own observation, *i. e.*, in the military cantonment, where a census was taken; in the civil station, where no regular census was taken, the proportion as given was about 40 per cent. The proportion per cent. of recoveries was 12, and that of deaths was 85 to 88.

Liability to attack.

As regards liability to attack, both the buffaloes and cattle of Assam (which are our only breeds) are equally liable; the imported cattle (of which there are a few) are not so liable. Age makes no difference; the females are more susceptible. The ill-nourished cattle are more liable to take the disease than those better fed.

Symptoms.

The first symptoms observable are dulness and disinclination for food; after this follow drooping of ears, entire loss of appetite, staring coat, followed by discharges from all the mucous surfaces—eyes, nose, mouth, and vagina; there is high fever and great increase of temperature, heaving of the flanks, swelling of the tongue and throat, aphthous ulceration on the cheeks, tongue, and gums; great difficulty in breathing, in some cases cough; but this was not a general symptom; this was the febrile stage, which varied from 3 to 7 days, some cases running a shorter course; then followed the dysenteric or typhoid stage; there were frequent dysenteric discharges; tympanitis came on; extreme fetor of the breath and discharges, exhaustion, and death. I never noticed shivering, but I noticed muscular twitching; there was early suppression of milk. There was a cutaneous eruption in many cases, but not in all; sometimes it appeared to be vesicular, and at others scabby. I noticed it principally on the neck, back, and axilla; I observed it in about one-third of the cases.

Post-mortem appearances.

I held some 18 or 20 *post mortems;* my attention was chiefly directed to the thoracic and abdominal viscera. The appearances were as follows:—

Mouth.—Ulcerated patches on the tongue and cheeks, tongue swollen, pharynx and œsophagus, mucous membrane injected of a dark magenta colour; ulcerated patches in pharynx and aphthous deposit.

The first three stomachs in most cases showed very little deviation from their normal condition. The 4th stomach was in every case congested, ulcerated in patches, and contained more or less puriform fluid of dark claret or magenta colour, of the same colour as the mucous membrane. The duodenum was also ulcerated, glands in some cases enlarged, in some the centres of ulceration. In the jejunum the same injected condition of the mucous membrane appeared; the Peyer's glands and solitary glands were enlarged, and on section presented a cream cherry appearance; base surrounded by congestion.

Large bowels.—The appearance was very much the same. Disease did not exist to the same extent as on the small intestines. The liver, spleen and kidneys, and pancreas in most cases, presented little deviation from their normal character. When the disease first appeared, and during the first six weeks of its prevalence, in every *post-mortem* I held, I found extensive traces of inflammation of the lungs. In the worst cases they were in a state of red *hepatization*. In those cases there was also effusion of lymph into the cavity of the pleura; latterly the signs of lung mischief were not so evident. In those cases in which the lungs were inflamed there was also pericardial effusion and endocardial inflammation. There was no disease of the valves or muscles of the heart; I might mention that in a lingering case, some time before death set in, there was gangrene of the lower part of the rectum and vagina.

Contagiousness.

This is the most contagious disease I know of, more so than small-pox or scarlet fever among human beings. I have known of a case of bullocks being brought into Debrooghur from a neighbouring factory, six miles off, where the disease had not existed, and not being unyoked or allowed to go near any cattle of the station where disease was then raging; but these bullocks became diseased five days after their return home, and so must have contracted the disease by simply passing over the roads in the station. Every care was taken to prevent their catching the disease; they were sent and returned by an unfrequented road, along a tract where little or no disease existed, and under the charge of a *burkundaz* (special messenger), and merely stayed for a quarter of an hour in my compound, where there was a large number of diseased cattle, though special care was taken that none of them should come near these bullocks. However, the ground and paths were covered with dysenteric evacuations of diseased cattle. After their return to their factory, they were attacked by the disease in five days. They were in a shed with 19 other bullocks, all of which were attacked and all died, with the exception of one; this shed was completely isolated, and the disease at that time did not spread to any other cattle in that locality, nor, indeed, did it till two months afterwards, when it was again introduced from Debrooghur, its track being easily traceable from house to house: this occurred in the Lawol factory, and about the same time an equally striking instance occurred in the Boghora factory.

Again, I would allude to the way in which the disease was introduced into Debrooghur. A sepoy of the 42nd Regiment brought a cow from Golaghat, where the disease was then rife, into cantonments, no disease whatever existing in Debrooghur or within a radius of 70 miles around it: this was in the month of June or July: the march occupied less than seven days. Shortly after this cow's arrival, the disease showed itself in her, and the next cow attacked had been tied near this animal; the disease gradually spread from this centre.

Disease in North Luckhimpore.

Question.—Are you aware of the existence of this murrain in North Luckhimpore before the arrival of the cow above referred to in Debrooghur?

Answer.—Yes, I was receiving official reports regarding it from my subordinate stationed there; but there was no communication between the portion of North Luckhimpore affected and Debrooghur.

Question.—Do you believe the disease there to be the same disease?

Answer.—Yes, identically the same; and it was introduced there from Nigriting, in the neighbourhood of Golaghat, I believe by buffaloes.

Question.—Have you ever heard of the contagion being carried from one locality to another by any other means or agency than that of cattle?

Answer.—No, I have not.

Other animals.

Question.—Do you believe that any other animals besides ruminantia can contract the disease?

Answer.—Yes, swine were attacked, and the disease ran a more speedy and fatal course in them than in ruminants; but I made no *post-mortem* examination. I do not believe that dogs or jackals contract the disease from eating diseased flesh.

Date of importation.

Question.—As you say you believe this plague has been originally imported into this province, have you any idea when it was so introduced?

Answer.—I cannot give any definite period, but it was anterior to 1853. I have heard it stated by the natives that prior to the outbreak of 1853 the cattle of this province suffered from two or three outbreaks. An interval of seven years occurred between each outbreak, and I am of opinion from what I heard that they were the same type of disease.

ASSAM.
J. B. White, Esq.
Increase of price.

Question.—You have stated that there is no doubt that the price of cattle has greatly increased of late years; do you attribute this wholly or only in part to the frequent recurrence of the plague?

Answer.—I do not think that the plague had anything to do with the enhancement of price amongst cattle, or, at any rate, very little. I attribute it chiefly to the large amount of money which has been thrown into the province, owing to the tea enterprise. When I first arrived in the province in 1858, tea speculation was only in its infancy. By that time the country had hardly recovered from the losses among cattle which occurred in the plague of 1853: yet at that time cattle were 50 per cent. cheaper than they were a few years later, after the tea mania had set in, and though cattle are very little employed in the cultivation of tea.

Treatment.

I have treated cattle affected with this plague during the present outbreak, and I am of opinion that if taken in the earlier stages treatment is efficacious, *e. g.*, I myself treated the Government cattle on this system, all attacked by the disease, and found that on the average 9 out of 12 recovered. I did not treat all alike. I treated according to the stage, *i. e.*, in the febrile stage I gave tartar emetic, calomel and digitalis; in the dysenteric stage, sometimes chalk and opium, and at others ipecacuanha and opium, the latter with more satisfactory result. The treatment was supplemented with nourishing food, such as soojee, conjee water, &c., &c. Under the orders of Government, I also treated many cases with carbolic acid and quinine in doses of half a drachm and one drachm every two hours. The result was not unsatisfactory, but it did not form a specific. But when I used the carbolic acid, the disease had assumed a much milder type, consequently I am induced not to put much faith on the carbolic acid; but I will always use it on account of its antiseptic qualities, in conjunction with the other drugs above alluded to.

Sanitary measures.
Stoppage of movements.

In the month of July last, when the disease first appeared, I suggested to the authorities, civil and military, that a police cordon should be placed round the sudder station, where we knew of the existence of the disease, in order to prevent all ingress and egress of cattle. The measure was so far successful that the disease was confined to the station and its environs for the first three months. It was only when the precautions were relaxed, because it was, believed that the disease had almost disappeared, that it extended some 6 or 8 miles off the station *i. e.*, to Madarghat and Jameerah. I feel convinced that were it not for those precautionary measures first adopted, the disease would have spread generally through the length and breadth of the district within the first month of its appearance in the station, and the loss to the ryots would have been as great as it was in 1853. I got all the ghats (ferries) stopped, and guards put on bridges in every direction. In addition, all the cattle—affected and unaffected—were removed to the uninhabited *churs* of the Berhampooter; I also recommended the burial of carcasses. But after the first, second, or third day it was found impracticable, as the number dying was so great, and the amount of laborers at the disposal of the authorities so small; I then advised that the carcasses should be all collected and conveyed in boats and thrown into the Berhampooter; this was done.

Disposal of carcasses.

When cattle were dying from the disease, special precautions were taken to prevent the Chamars from removing the hides. Horns and hoofs are not made use of by the chamars.

Other animals.

Swine and deer I have seen affected with the disease, and a deer kept in the Debrooghur jail died of the same disease.

Cholera.

I know of no instance of man being affected by the contagion of the disease; the cholera and cattle plague were always synchronous.

Cattle plague in its milder form prevails now, and at the outbreak of plague, cholera appeared for two months.

Weather.

As I have observed before, when the disease has once broken out, I do not think that any change in the weather has any effect on it.

Introduction from Central Asia.

I wish to state, having seen it mooted in the public papers that it is possible that the disease could have been introduced from Central Asia across the Himalayan range, that no such communication exists or ever has existed, and I never heard of the plague existing amongst the cattle in the hills. I am certain that whenever it was first introduced into Assam, it was imported from Lower Bengal, because it has always worked up the valley from that direction in the case of every outbreak.

DEBROOGHUR.
B. E. C. Comber, Esq.

Evidence of B. E. C. COMBER, Esq., *Manager of the Burbooroah Tea Factory, Assam, recorded 10th February* 1870.

Description of locality.

The information which follows refers to Jameera Mouzah, which is a pittar about 5 miles long by 2 miles wide, surrounded by numerous villages, and situated south-west of Debrooghur. It is used for rice cultivation, and there is also light jungle and grazing ground on either side of it.

Number of cattle in locality.

As regards the number of cattle in the locality and the number to square mile, no statistics are available. Cows are kept in great quantities for milking purposes; the bullocks used for cultivating the land are few compared with the total number.

BURBOOROOAH.
B. E. C. Comber, Esq.

The breed of cattle in this district has been allowed to deteriorate year after year, and no attempt appears to have been made to improve the breed. In-breeding has been permitted to any extent, and this alone will account for the small, weak, and generally useless class of cattle in the district, and is, I imagine, a great reason why they so easily succumb to the disease.

Uses for which cattle are employed.

Cattle are employed for rice cultivation, but the larger number I believe to be kept for milking only. The Assamese hold their social position in a great measure from the number of cows and buffaloes they possess.

Bullocks and also cows are employed in ploughing the *dhan* fields, but little used for draught purposes. The animals generally are allowed to graze either in the rice stubble or grass ground surrounding the villages, being housed in a rough shed during the night.

The Assamese care little beyond the actual possession of the cattle and are loth to sell milk. They also seem to use little themselves.

Mode of housing.

The cattle are collected in the evening and housed in a rough shed, each village having its own accommodation; in some cases I believe the cows share the owner's hut.

Mode of feeding and watering.

The animals are sent to feed on rice stubble or at other seasons on grass land attached to the villages. I do not think there is ever a great scarcity of forage, and water is always procurable near villages.

Particular kind of grass and fodder.

The grass and fodder obtainable in and about the villages consists of what can be found on the rice fields and the grazing ground adjoining. The grass is of a good quality (*doob* grass), and, I imagine, nearly equal to hay.

Water whence obtained.

There is no want of water in Assam; during the greater part of the year it is available on all sides, and during the cold season each village is provided with wells.

Herding.

Cattle are herded during the day and attended by boys, who take them in the evening to their several villages.

Cattle are, I believe, confined within a certain district, thus the Jameera pittar, surrounded as it is by several villages, affords pasture for all the cows and bullocks within the radius of the pittar.

General condition of cattle.

The general condition of the cattle in Assam is decidedly bad, consequent, no doubt, on the careless system which prevails of allowing the animals to herd, and no precaution being taken to prevent in-breeding.

Stock how kept up.

No attempt appears to have been made to improve the stock, and the young bulls are allowed to herd with the cows, a practice which of course causes the stock to deteriorate. Bullocks and buffaloes increase in value at the commencement of the *dhan* season, and it is natural to suppose that in consequence of the great mortality the price will be greater during the coming season.

Markets.

There are no hâts (markets) near the villages. The people go to Debroo, which is six miles distant, to purchase and sell cattle.

Export of cattle.

There is no export of cattle from the district.

Export of hides.

I have had no experience as regards the hide trade. All the cows that have died from the disease have, as far as I know, been buried at once with their hides on.

I made particular arrangements for a staff of men to bury the dead cows on the factory land.

Mortality among cattle, ordinary and from plague.

The ordinary mortality amongst cattle is slight, but from my experience I do not think I am exaggerating in saying that from 50 to 60 per cent. have fallen victims to the plague.

The coolies at this factory owned 107 cows when the disease appeared; the amount now is reduced to 44, showing a mortality of 63, which is considerable; besides this, I have lost 6 out of 12 bullocks and cows belonging to the Company and myself. I am now writing of my personal experience, but I am told that the natives in the Jameera pittar, which is close to this, and comprises a number of villages, are considerable sufferers.

History of plague.

My experience does not extend beyond 1863, but I am told by the natives that in 1854 or 1855 an epidemic occurred, though, I am told, somewhat different in character from the present one, being more of the nature of cholera with pain; whereas in this instance there appears to be no pain, and the animal seems to gradually sink from disease.

Kind of cattle most liable to attack with regard to breed, age, sex, and condition.

I do not think that there is any difference in the liability of cattle to attack as regards breed, age, sex, and condition. I have had experience of three different classes, *i. e.*, buffaloes, large imported cattle, and common Assamese cattle, and they all seemed alike liable to take the disease.

Symptoms.

The animal when attacked shows languidness, drooping of ears, and general debility, rough coat, want of appetite, but desire for water, apparently no pain, but discharge from nose and mouth, the skin is rough and also the hair.

BURBOORDAH.
B. E. C. Comber, Esq.

Swelling of the tongue and throat, with difficulty in breathing, and cough were apparent in the later stages when diarrhœa had set in, and when, I imagined, there was little hope of saving the animal.

When diarrhœa set in, I found from my experience that there was no hope, and in each case the animal died, though chalk mixture and other remedies were applied.

The animal when attacked shows a decided inclination to lie down, or to rush to water, and appears generally restless, though evidently not in great pain. Extreme languor afterwards comes on, and violent diarrhœa sets in. I have never examined a body after death.

Contagiousness.

The disease appears to be most contagious. Every measure was taken at this factory; a guard was stationed at the main road leading to the villages; this was successful for a certain time, but from the circumstances of one diseased animal having escaped the notice of the guard and being allowed to herd with the factory cattle, the whole mischief was done. My plan was to isolate a diseased cow or bullock, and I provided separate houses for this purpose. The original bullock shed where the disease first made its appearance was dug out at least 2 feet, and lime and fresh earth supplied, my impression being that any deposit of mucus from the diseased animal would be prejudicial.

Treatment.

I am unable to give an opinion as to the treatment of cattle affected with plague.

Sanitary measures.

Measures should be taken to isolate the cattle as much as means will admit. If disease appears, the unhealthy animals should be immediately separated from the rest.

In every case where an animal dies it should be at once buried. I believe that, as a rule, the animal is buried as it dies.

I strictly carried out the orders of the Superintendent of the Company, by having a small force, say some five or six men, to bury the dead animals at some distance from the lines, so as to prevent unhealthiness in the cooly lines.

Prevalence of disease among other animals.

I have *heard* of goats having been attacked, but no other animals. I have not myself seen any attacked. I have myself a number of goats which were grazed with diseased cattle, but none of them were attacked.

Whether any epidemic prevailed simultaneously.

I do not think that the cattle plague has affected the health of the people in the district generally, and cholera and small-pox have not been more apparent this year than in others.

Mr. Comber having been provided with Form No. 4, as drawn out by the Commission, has kindly filled it in, and now produces it, after reading which the Commission put the following questions:—

Markets.

Question.—Is there any cattle market at Debrooghur, weekly, monthly, or yearly?

Answer.—No, there is no regular market, but at the different pittars the people meeting together talk over their respective circumstances, and thus come to know who have a surplus and who are in want of cattle, and thus dealings are transacted.

Second attack.

Question.—Do you know whether an animal which has once had the disease and recovered, is again liable to take the disease, or whether an animal which has once recovered is considered by the natives more valuable than others which have not taken the disease?

Answer.—It has never come under notice, so I cannot say. *2nd.*—I do not know that the natives make any difference.

Agriculture.

Question.—Do you think the agriculture of the country is likely to suffer in consequence of the disease?

Answer.—It is hard to say; at present I do not think that it has suffered.

Price.

Question.—Do you think the price of cattle will increase in consequence?

Answer.—Yes, I think it will next season.

Effect on stock.

Question.—Do you think that a sufficiency of cattle remain for agricultural and dairy purposes?

Answer.—Yes, I certainly think so, and in fact, as far as the disease has gone at present, I do not think that it has done much harm to the country, though it may raise the price of cattle for the time. The country was overstocked before, and now that there are fewer, it is likely that those left will be better looked after, and thus the breed improved.

Preventive measures.

Question.—If it was considered necessary for the Legislature to interfere, with a view to staying the spread of the disease, could you recommend any plan which in your opinion should be adopted?

Answer.—The only thing that I can think of is to introduce a strict system of quarantine in all places in which the disease has shown itself from the very commencement.

BURBOOROOAH.
B. E. C. Comber, Esq.

Question.—Do you consider the disease to be indigenous to the country?

Disease indigenous.

Answer.—From what I have heard, my experience being limited to the present outbreak, I certainly consider that it is not indigenous, but imported.

Examination of the REVD. E. H. HIGGS, *taken at Debrooghur on the 10th February* 1870.

DEBROOGHUR.
Revd. E. H. Higgs.

Question.—What experience have you had with regard to the present and past cattle murrain in Assam?

History.

Answer.—I have been in Assam for the last 19 years, during which time I have visited nearly every part of it, but have chiefly resided at Debrooghur, from which place I have made frequent excursions into the interior of Luckimpore District, both north and south. In 1854-55 I had experience of the murrain then prevalent. I had experience of it both in Debrooghur itself and also in North Luckimpore; in the former place only among domesticated animals, but in the latter both among domesticated and wild animals.

Murrain of 1854.

Question.—Do you think that the disease now prevailing is the same as that which prevailed in 1854-55?

Answer.—From external appearances I should say not.

Question.—What were the external appearances of the disease as it prevailed in 1854-1855?

Symptoms of 1854 disease.

Answer.—Running from the eyes, nose, and mouth, very high fever, great difficulty in eating, drinking, and swallowing, chiefly caused by the soreness of the mouth and tongue, the mouth looking as if it had been severely scalded, the tongue being covered with blisters, great congestion of the inside of the cheeks. I did not observe anything with regard to the roof of the mouth, but the throat in any case was as severely affected as any other part of the mouth; did not observe any external swelling. The feet got sore, commencing in the cleft of the hoof and gradually spreading all round the top of the hoof, which in some severe cases eventually sloughed right away. The external coating of the tongue also in some cases sloughed away. I did not *observe* other blisters on other parts of the body. After the first symptoms, *i. e.*, the running of the mouth, nose, and eyes, the bowels became relaxed; then a scanty green slimy dung came away, apparently involuntarily, and in the latter stages blood appeared mixed with the stools, with clots half bloody and half matter-like, and pain was evinced in the passage of these stools. During these latter stages the animal appeared to be in great pain, frequently getting up and down, looking round to its flanks, and when down extending his nose straight out and bringing, as it were, as much of its belly on the ground as possible. The stench from these dysenteric stools was very great. Animals attacked generally died in from two to four days, but I think some animals died even under the 48 hours.

Question.—Did you make any *post-mortem* examination of the cattle which so died, and if so, what diseased appearances did you find?

Post-mortem appearances.

Answer.—I made several, both in company with Dr. Maclean and also by myself, and found acute inflammation extending from the mouth down the gullet, all through the stomachs and bowels. I noticed particularly the condition of the fourth stomach. It attracted my attention specially, being more like the stomach of other animals, and its inner surface was not only intensely inflamed, but in some places ulcerated, the ulcers varying in size and in depth; in some cases the wall of the stomach having been perforated and the contents of the stomach in the abdominal cavity. The cells of the second stomach were in some cases found more or less damaged by the walls of the cells being broken into one another. The folds of the third stomach were found inflamed at their loose edges; the small bowels I did not examine, but the larger bowels were found in the same state as the fourth stomach, except covered with patches of orange and dark red color, and here and there were patches of bad fat-looking material adhering to the lining membrane. I did not examine the lungs, but Dr. Maclean found them, also the brain, very much congested.

Question.—In what respect do you consider the appearances of the present disease differ from those of the disease as it showed itself in 1854-55?

The present disease.

Answer.—With regard to the present disease, I can only speak of external appearances, and the great difference which I have noticed is, that in the present instance I have not noticed the great soreness of the mouth or feet. In the present disease the coat seems to stand on end much more than in the former attack. I have had but little opportunity of judging of the present disease, only having seen a few cases.

Question.—Where did the disease make its first appearance in 1854-55, as far as you can remember?

Origin of disease of 1854.

Answer.—We heard first that it was raging in the Golaghat District, and was introduced here by some men of the 42nd Regiment bringing up some cattle with them from that district to Debrooghur.

DEBROOGHUR.

Rev. E. H. Higgs. Of the present disease.

Question.—What do you consider to have been the origin in the present instance?

Answer.—As far as I have heard, it originated in the same way as the disease of 1854-55.

Question.—Do you consider the disease to be indigenous to the country, or do you think it is imported?

Disease indigenous.

Answer.—I am of opinion that it is often conveyed from one district to another, but I consider that it is indigenous to the country, inasmuch as I believe that it is always in some one or other part of the country; but when it is imported from one part of the country to another, it is always of a more virulent type in that place to which it has been imported.

Infectiousness.

Question.—Are you of opinion that the disease is infectious?

Answer.—As a rule, I certainly consider it to be infectious, but I have known of individual cases in which it would appear not to have been so, but those cases I think attributable to the fact of the individual animal not being susceptible to the disease.

Buffaloes.

Question.—Do you consider the disease more destructive to buffaloes than cows?

Answer.—Yes, the present outbreak I do, but in the 1854-55 outbreak I did not notice any difference. I know of a case this year in which one of my servants had 23 buffaloes, all of which died; he had also 25 cows, of which he lost 24, the other one only being saved through being separated from the rest.

Second attack.

Question.—Do you think that an animal which has once been attacked and recovered can be again attacked?

Answer.—I cannot say of my own knowledge, but the people have a very strong idea that they cannot; in fact, the people who have such an animal will not sell it, though other people may be and are anxious to buy it at three or even four times its original value.

Agriculture.

Question.—Do you think that the agricultural prospects of the country will suffer in consequence of the great mortality which has taken place among cattle?

Answer.—No, I do not think that it will,—that is, speaking of the country or district as a whole; it may fall very heavily on individuals, but the country at large will not suffer materially.

Increase of cattle.

Question.—Can you give us any idea as to the rate of increase among cattle in the country?

Answer.—It is very great. I can speak of my own herd which began with 20 cows, and at the end of 11 years I had sold 185, and besides these, of course, there had been the usual amount of mortality.

Breed.

Question.—Do you think that the breed of cattle can be improved in the country; if so, by what means?

Answer.—There is room for very great improvement, which might be effected if only the apathy of the people could be overcome. I myself was successful in rearing a superior breed of cattle from native stock. I showed them to the people and endeavoured to persuade them to follow my example, but though they were willing to pay me for my enhanced prices, they would not do anything for themselves.

Legislation.

Question.—Do you think that there is any cause for the Legislature to interfere in the event of another outbreak?

Answer.—Only in so far as to strengthen the hands of the local executive authorities, by making legal the measures which they have already adopted.

I would here add that in reference to my note book, I find an entry on the 16th February 1869 to the effect that up to date 10,000 cattle had been reported dead of plague. I mention this, as the cultivation of the rice lands does not actively commence till August, by which time the mortality must have increased, and yet, notwithstanding this, there has been a better rice crop than has been known for years, thus showing that as yet the agricultural prospects of the district have not suffered.

The following statement was handed by Mr. Higgs to the Commission when he attended to give evidence:—

Different breeds of cattle in the locality, and their average value.

Practically there is only one breed of cattle in Assam.

In 1851, cows in milk and plough bullocks were commonly bought for Rs. 4 to 6 per head. In 1855 they were double this price, and in 1860 they were Rs. 10 to 12. At present the price is from Rs. 15 to 30. In 1860 male buffaloes were bought at Rs. 10 to 12 each, and female for Rs. 25 to 35. At present male buffaloes are worth Rs. 30, and Rs. 150 to 200 can be obtained for a good number of female buffaloes, if young and in fair condition.

Uses for which cattle are employed.

Cattle are used chiefly for the milk they yield.

Compared with the total number of cattle in Assam, the number used for agriculture is very small indeed, and only during two or three months in the year.

DEBROOGHUR.
Rev. E. H. Higgs.

No cows are ever employed for agriculture or burden.

Cattle are seldom used for draught or burden, except for ploughing. When so used, their treatment is good. I have never seen an animal ill-treated by the Assamese. Ill-treatment of draught and plough cattle in Bengal is common enough. The cows and buffaloes are chiefly kept for dairy purposes.

Mode of housing.

The cattle are housed in huts similar to those occupied by the generality of ryots. Twenty cows are crowded into a space 12 × 10 feet, which is hardly ever cleaned out, and is generally 18 inches deep in filth.

Mode of feeding and watering.

The cattle have invariably to shift for themselves.

There is always a scarcity of forage for cattle in this part of Assam, except from December to June, when the jungle can be burnt and the cattle pastured in the newly springing grass. The grazing grounds proper cannot support the immense herds of cattle kept by the Assamese. There are no particular kinds of grass or fodder used, and there is no stall feeding.

Whether herded by day or night.

As a rule, cattle are never herded at all. The cattle are driven out in the morning to go whither they wish all day, and are sought for in the evening if they don't come home by themselves,—that is, if they happen to be giving milk at the time, or if there is any alarm of a tiger being in the neighbourhood. Cattle are not herded and driven for pasture to other districts.

General condition.

On the whole, the condition of cattle is tolerably good, and varies according to season.

Stock how kept up.

The stock is kept up anyhow, the matter being left to Nature. No special bulls are kept, and the natives of this part of Assam would not use them if there were any, as I have proved by experience. There is no importation of cattle into the district.

Mode in which cattle are bought and sold.

There is no particular mode of buying and selling. The cattle are not usually taken about for sale. The buyer goes to search in neighbouring villages for what he wants; seldom goes far from home. Cattle are sold in greater numbers at the times of the revenue instalments falling due.

Export of cattle.

The only regular export of cattle from this part of Assam, and that only to a limited extent, is to the Mishmee Hills in the cold weather. The Mishmees buy up the old and worn bullocks at a cheap rate, Rs. 3 or 4 each; they say that they soon fatten in the hills, and that they then sell them to the Lham country.

Hides.

There is no trade in hides.

Mortality among cattle, ordinary and from plague.

Except from plague there is no mortality among cattle in Assam, barring old age. But at the same time a form of foot and mouth disease is always present, more or less; but the mortality caused by this is not very great, and beneficial rather than otherwise, as almost the only safety valve, preventing the cattle themselves becoming a plague.

History of plagues.

The only cattle plague of which I have had any personal experience was that of 1854, an account of which by various people may be found in the Journal of the Agricultural and Horticultural Society of the time. I had a large herd of cattle of my own at the time, and took much trouble in treating the cattle of natives when attacked; and meeting with some success, I gained some reputation, and for some years, up to the time of my leaving Assam in 1863, was frequently applied to for treatment of cattle; and from this I am able confidently to say that isolated cases of foot and mouth disease in cattle have constantly occurred from 1854 to 1863, and also during the last two years. The present plague was markedly ushered in by an accession of cases of foot and mouth disease. Previous to 1854 I had not heard of any cases of cattle plague, but the natives informed me at the time that a similar form of disease prevailed periodically in about 20 years. This plague of 1854 was unmistakably what is called "foot and mouth" disease, and was introduced into this district from Golaghat by a detachment of the local regiment bringing with them on relief a herd of cows, according to their custom. The disease at the time was raging at Golaghat. The present disease was introduced into this district in the same way precisely. At the time of the plague of 1854, or rather just before it broke out here, there was nothing remarkable about the weather too; after it broke out here it was fancied that there was unusual drought, but the weather record regularly kept by me did not bear this out. The disease did not originate here; it was introduced, and was not perceptibly influenced by weather. The plague of 1854 lasted about 6 months.

Kind of cattle most liable to attack, with regard to breed, age, and sex.

It may be said that there is only one breed of cattle in Assam; my observation leads me to conclude that the young entire bulls and old decrepit plough cattle are most liable to be attacked, and least likely to recover. The young vigorous heifers not so frequently attacked, and less likely to succumb. I am speaking of 1854. This plague seems to have run right through whole herds without discrimination. The symptoms of the disease are as follows:—

Symptoms.

Referring to the plague of 1854 or 1853, shivering was not observed; appetite was apparently good, but the animal was unable to eat from the state of the tongue; rumination ceased soon after attack; there was high fever, coat staring; discharge from eyes, nose and mouth ·

DEBROOGHUR. Rev. E. H. Higgs.

the tongue was swollen and eventually covered with small ulcers, and the outer skin sloughed away; the throat was swollen and highly inflamed; the breathing was very hard, and cough was not observed; great looseness of bowels was not observed, except in cases far advanced, and then generally blood and mucus were present; the secretion of milk was almost invariably quite suppressed; the posture was crouching, with neck stretched out at full length, and laid flat on the ground.

Post-mortem appearances.

In 1854 I examined very many bodies after death, with the assistance of Dr. Maclean, the then Civil Surgeon. I believe his report of the *post-mortem* examinations is to be found in the Agricultural and Horticultural Society's Journal. Shortly, we found the whole of the intestines, from the throat and gullet, right to the extremity of the large gut, highly inflamed and ulcerated; lungs inflamed, but not always; food not passed from first stomach.

Treatment.

In 1854 or 1855 I most successfully treated the disease then prevailing on an extensive scale. As soon as possible after the symptoms had shown themselves, I bled the animal copiously, according to its age, size, and strength; kept the mouth, nose, and eyes clean by repeated washing, occasionally with chloride of lime and water; encouraged the animal to suck rice gruel made with water in which hay had been boiled, and kept it clean and warm. This treatment was the only one found to answer, and not more than 5 per cent. of those so treated died.

Prevalence of disease among other animals.

In 1854 or 1855 the wild animals—buffaloes, deer, pigs—died in very large numbers during the plague. I speak from personal observation. I have no personal experience as to what has happened lately. A severe outbreak of cholera immediately preceded the cattle plague of 1854 or 1855, and cholera was prevalent also immediately preceding the plague of 1869-70.

Baboo Nobin Chunder Burooah.

Evidence of BABOO NOBIN CHUNDER BUROOAH, *2nd Grade Moonsiff of Debrooghur,—recorded 11th February* 1870.

Is a native of Jorehaut in the Seebsaugor District. Has lived for 30 years in Debrooghur; owns some 50 beegahs of land close to Debrooghur. Has some 20 head of cattle now; had some 80 head of cattle before the plague. Lost some 60 head; out of the remaining 20, 12 fell ill and recovered; they died in the months of September and October. Witness states,—the disease came to my land from the village of Kurriamaree, which had got the disease from Debrooghur, into which it was imported by sepoys' cattle from Golaghat. I saw the diseased cattle myself; the symptoms I noticed were,—refusal of food, swelling of throat, stupid appearance, drooping of ears, discharge from eyes, nose, and mouth, in which excoriations formed, great thirst, after a few days watery, offensive stools—in some cases containing blood—were frequently passed. They died after 5 or 6 days. Those which manifested an eruption (5 or 6 in 20) recovered.

Stock. Loss.

Symptoms.

Previous outbreaks.

In about the year 1856 many cows died of a severe disease like cholera, which was characterized by purging and rapid death. Previous to that, while Assam was under Native rule, about the year 1722, (*Secabda,*) a similar disease to the last prevailed in Seebsaugor. I heard this from my forefathers.

Foot and mouth disease.

Between these outbreaks, foot and mouth disease, which generally breaks out in the month of August, has prevailed annually. It is called *soboka*, *khurpakka*, and, *khoorah*.

Price.

The price of cattle of all sorts has risen much.

A cow which would now cost	Rs.	24,	would cost	Rs.	8	ten years ago.		
Bullock	„	„	„	20	„	„	6 or 7	„ „
She buffalo	„	„	„	150	„	„	60 or 70	„ „
He buffalo	„	„	„	40	„	„	27	„ „

Cause of increase.

I attribute the rise of price to the loss of cattle; other articles, such as mustard oil, rice, &c., have also risen in price. This is owing to the influx of Europeans and the greater demand for articles and larger amount of money brought into the country. This, no doubt, also assists in raising the price of cattle. A rupee now is much cheaper and less valuable than it was.

Agriculture.

After 1856 the agriculture of the country did not materially suffer.

I am of opinion that there may be some inconvenience in cultivating this year, but manual labor will supplement that by bullocks. The same amount of land is cultivated now as formerly.

Infectiousness.

I consider the disease highly infectious; I separated my cattle without effect, but to no great distance; but I know of an instance in Deorgaon, when a man (Housedhur) on hearing of the approach of the disease sent his buffaloes to a distance of one day's journey. They all escaped; I consider therefore that this is an effectual method of preventing the disease. I know other instances: one Jeynoor of the Debrooghur bazaar, who saved 6 buffaloes by sending them across the Berhampooter. The Sheristadar did the same and saved his cattle.

Quarantine.

I think that it would be an excellent measure if, in future outbreaks, a village attacked with disease should be placed in quarantine, and cattle not allowed to enter or leave that village.

DEBROOGHUR.
Baboo Nobin Chunder Burooah.

I am of opinion that the disease can be conveyed by man. The disease existed in a place called Salnah Koti, and as long as the cowherds were prevented coming to Debrooghur, no disease appeared then; after the men came, in spite of orders to the contrary, disease broke out in Debrooghur.

Conveyance of disease.

I have heard that swine and deer were attacked by the disease. I have seen a tiger which was found dead during the prevalence of cattle disease. Ulcers existed on the mouth, and the thighs and tail were covered with excrement. I know of no medicine for the disease. I think that if segregation is effectually carried out many cattle may be saved.

Swine and deer.
Tigers.

Examination of H. E. S. HANNAY, Esq., *of the Hannay Tea Estates,—taken at Debrooghur on the* 11*th February* 1870.

H. E. S. Hannay, Esq.

I reside at Debrooghur, where I have been since the commencement of 1860.

Locality.

I can only give any information with regard to the country round about Debrooghur, say for a distance of 3 or 4 miles. The soil is clayey.

I should say that on the average there are 13 or 14 cattle to a house; this does not include buffaloes, which, as a rule, only belong to the rich men in the village, though there are generally a good many of them in each village. I can give no idea as to the number of cattle per square mile.

Number of cattle.

The only breeds are the common Assamese cattle and buffaloes; the latter are for the most part bred up here, the wild bulls generally being the sires of the young stock.

Breed and value.

Before this plague came, I do not think that the price had changed much during the last ten years, but since the plague set in the price has greatly increased, especially with regard to plough bullocks, which are worth more than double what they were before the plague,—*i. e.*, those that were worth Rs. 25 a pair before the plague, are now worth at least Rs. 60, no matter what the size. With regard to cows, there is not much difference. With buffaloes the difference has been in the same proportion as with the plough bullocks.

Cattle are used for ploughing, dairy, and draught, such as pulling in timber and bamboos for the building of houses, as also firewood. Carts are not used by the natives, and the few that are used belong to Europeans.

Uses of cattle.

Agriculture is carried on from February to the end of March, and from May to the end of July. Bullocks and buffaloes are used for agricultural purposes. I have never noticed a cow being used, not even a barren one. I have never seen any bullocks or other cattle used for pack work. The cattle used for ploughing are generally taken to work at daylight, and after two or three hours' work they are let loose for the rest of the day to pick up what they can; at night they are taken home and housed, but I am not aware that they are fed during the night in any way. The dairy cows are treated in much the same way as the plough bullocks, that is to say, they are turned loose to graze and brought home at night. They are not milked till 10 or 11 in the day. I can't say what the proportion of the different kinds of cattle is: a man will only keep enough of bullocks to plough the land he cultivates, whilst he will keep as many cows as he can get, whether he wants the milk or not, just to say that he is the owner of them.

The cattle are either kept in half of the owner's own house, or there will be another house for them very similar to that in which the owner lives. The sheds are made of bamboo sides and thatched roof.

Housing.

The food of the cattle consists of simple grazing in the jungle, or after the rice crop is cut in the pittars. I do not know that any of them are stall-fed. With regard to water, they go to any place where it can be got; if a river is near they go to it, if not they go to the nearest ditch: I have never seen water being drawn for cattle.

Feeding and watering.

The grass which cattle feed on is, as a rule, the *doob* grass off the Government roads, also the young shoots of *ooloo* grass which spring up after the jungle has been burnt.

Cattle are, as a rule, herded during the day, and at night shut up by their respective owners,—that is to say, all the cattle of a village generally feed in the same ground during the day. I do not think that they are herded and sent for grazing to other districts, nor do I see any reason why they should; as a rule, each village having sufficient pasture ground for its own cattle for the whole year, though of course the cattle in the low land villages come badly off during the rains.

Herding.

The general condition of cattle is, I should say, as a rule, not bad; but the cold weather is the worst time for them, except in those places near swamps, which then afford capital pasture lands.

Condition.

DEBROOGHUR.
H. E. S. Hannay, Esq.
Stock how kept up.

The stock is kept up, not by importation, but by breeding, which is carried on indiscriminately, all the animals, of whatever sex, being turned out together and allowed to breed in-and-in as they like, no special bulls being kept for the purpose.

I do not know of any importation going on, with the exception of a few female buffaloes which we imported from Bengal; I cannot say at what price they are sold, but I should think a male would be worth about Rs. 20 or 25.

Markets.

There are no cattle markets about here: all the purchases are by private transactions.

Hides.

There is no export of cattle, nor of hides, the Assamese not trading in them. There are no dealers in hides.

Mortality.

In ordinary years I should say that the percentage of deaths was very small, and am of opinion that as many are killed by wild beasts as die from natural causes. In the plague I should think that from 50 to 60 per cent. died.

History.

As regards the history of murrain, I cannot say anything of my own knowledge; but the old factory servants tell me that some 12 years ago there was a plague of a similar nature, though not so severe as the present one; they say that it came from lower down the river.

There is no doubt that the present disease was introduced into this district by some buffaloes brought up from Golaghat. I do not think that the disease is indigenous to this province, but am of opinion that it is always imported from some place or other. I have never heard of any plague having existed here prior to that which I have referred to as having occurred some 12 years ago.

I do not know of any other plague existing among cattle. I have not seen anything of the foot and mouth disease, though it may sometimes appear during the rains. There is another disease which affects the tongues of the cattle, but that the Assamese can easily cure for themselves.

I cannot say whether different varieties of plagues are apt to prevail at different seasons, as this is the first outbreak I have seen.

Liability to attack.

I should say most certainly that the buffaloes suffered most from this murrain, even including the wild ones. Of cattle, we have only one herd. I do not think that age or sex makes any difference, though I do think that poor condition tells after one animal has been attacked, but at the same time do not think that it renders the animal less liable to attack.

Symptoms.

The symptoms of the present murrain are,—want of appetite, rough staring coat, drooping ears, running from the nose, great thirst, so much so, that the animal generally made its way to the nearest water, where it stood and drank till dysentery set in, when it shortly afterwards died. Did not notice any shivering. The skin is covered with little sores, the hair coming off, showing the skin covered with scales. I did not notice any swelling of the tongue or throat. I observed heaving of the sides and cough. There is looseness of bowels and passing of blood. I cannot say whether there was any change in the secretion of the milk. The animal stands in a dejected position, with drooping head and a great disinclination to move.

Contagiousness.

The disease is highly contagious; my reason for so thinking is that I have one garden which is entirely cut off from the surrounding country by a large pittar, the only access being by a private road of my own, passing my Manager's house. He refused to allow any ingress or egress for cattle, and the consequence was that no disease showed itself in that garden, though it was raging all round. After a long time one of the cows belonging to the garden accidentally got out and crossed the pittar on to the Debroo side, when a watch was kept to prevent its return, but its owner brought it back during the night by a circuitous route through the jungle; within two days of its return, the disease broke out in the garden and carried off nearly every head of cattle in it. I cannot say whether the cow that strayed was the first to die or not, but there is no doubt that it introduced the disease.

Treatment.

I treated my cattle with tartar emetic, opium, calomel, and digitalis, from "Stonehenge on Dogs," giving an increase of the dose named for dogs. I treated a great many by distributing pills among the coolies. I know of 13 recoveries. Diet consisted of only warm water.

Sanitray.

Cleanliness was attended to, sick were kept apart from healthy, specially at grazing time, and I had all the carcasses buried. The *whole* animal was invariably buried.

I have noticed pigs die of the disease,—I have seen this myself,—but not wild animals.

I have known a cooly eat the meat of a cow dead of rinderpest, the carcass having been buried about one day, without bad effect, so far as I know. The disease does not generally prevail at present, except in one out-factory of mine.

Legislation.

Question.—In case of any future outbreak, do you recommend interference of Legislature?

Answer.—Yes, certainly; the local authorities should have the power of enforcing such measures as may seem to them to be necessary in order to stay the progress of the plague by infection. I believe that the present outbreak would have been attended with greater loss had

not the Deputy Commissioner adopted measures which to a great extent checked the spread of the disease; and, as Justice of the Peace, I saw that such measure were carried out in and about the mouzahs near my several factories; but it should be observed that these measures were not strictly legal. I would also advocate the appointment of duly qualified individuals to act as Inspectors of Cattle, and they should submit periodical reports to the Magistrate on the state of health of cattle. I would certainly recommend that no Assamese Mouzahdars should hold such an appointment, as from their apathetic nature their reports cannot be relied upon. DEBROOGHUR. H. E. S. Hannay, Esq.

Question.—What is your opinion as to the contagious or infectious powers of this cattle plague? Infectiousness.

Answer.—I believe that by a sound animal feeding on the same pasture, living in the same house, and inhabiting the same shed with the diseased animal, he will contract the disease; but I do not think that the disease can be caught by a sound animal walking over the ground traversed by a diseased animal. In the instance of my own cattle, I was particular in having them kept apart from diseased cattle, which were to be seen all about the neighbourhood; but my cattle had to walk over the same ground in the neighbourhood of my house, and not one of my animals became diseased.

Question.—Do you believe that much loss has been or will be sustained by the late outbreak? Loss.

Answer.—No, I do not; because it has not gone over the whole province. The agriculturists who may require bullocks or buffaloes for ploughing can obtain a sufficient number, and there is a sufficient number in the country: indeed, I believe before the plague there were too many. There will be no harm done at all in any way; the country at large will not suffer: a few individuals may.

Statement supplied by CAPTAIN J. F. FITZG. COLOGAN, *Adjutant, 42nd Regiment, Assam Light Infantry,—dated 22nd February* 1870. ASSAM. Captain J. F. Fitz G. Cologan.

The following information applies to the Debrooghur cantonment. Locality.

The soil consists of clay with a substratum of sand.

The number of cattle in cantonments before the plague broke out was 940. Number of cattle.

The cattle are all Assamese, bred in the districts round about; their average value is Rs. 20. They cost Rs. 10 per head ten years ago, and now from Rs. 15 to 30 and 40. Breed. Value.

Cattle are entirely kept by the men of the regiment and residents of the bazaar for the sake of the milk; about 100 cows in the bazaar and Futtagaon are kept, the milk being sold to residents in the station for food and butter, and also to the *halwaies* for sweetmeats. Uses.

These cows are housed in sheds made of bamboo, *ekra,* and grass, about 12 feet in length, 10 feet in breadth, and from 7 to 8 feet high. Housing.

Cattle are grazed and fed with common rice boiled and *kalai,* and taken to the Debroo river to drink. Feeding & watering.

The kinds of grass are known as *doob, chob, khur, khuggra.*

Cattle are herded by day in the cantonment pasture lands. Herding.

The general condition of cattle is above the average of Up-country cattle. Condition.

The stock is kept up by breeding in-and-in; there is no importation of cattle. Stock how kept up.

Cattle are bought and sold by private dealings; there are no hâts or markets where cattle are disposed of. Buying and selling.

The mortality among the cattle has been till the plague broke out about 1 per cent.; since the plague appeared about 66 per cent. Mortality.

Reports say that the plague visited cantonments about 10 or 12 years ago, but of this there are no official records. The recent plague answers the description of the Russian rinderpest. It spread by contagion it is said. It broke out in June 1869, and continued in the cantonment to the end of July. It has been known to exist in the neighbourhood up to the present date. History.

The statistics of cattle plague in cantonments are shown in the appended form.* Statistics.

No breed, age, sex, or condition of cattle seem exempt; buffaloes and cows appear to have suffered equally. Liability.

The symptoms observed were those usually assigned to rinderpest. Symptoms.

The cantonments were cleared of all cattle, and the diseased separated from the healthy across the Debroo river. Some carcasses were buried, but deaths becoming too numerous, the carcasses were thrown into the Berhampooter, some distance from the station. The hides, horns, and hoofs were buried with the carcasses. Sanitary measures.

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* See Appendix No. 3.

ASSAM.

Evidence of ALLIGA, *Mouzahdar of Lahowl Mouzah,—recorded 29th January* 1870.

Alliga.

I had originally 17 cattle; 17 were attacked by the prevailing disease, 3 survived.

Distinguishes three kinds of disease,—one with running of the eyes, nose, and mouth, another purging and dysentery, and another a dry eruption all over the body: latter form the most likely to recover. Says that a similar disease occurred 14 years ago.

Collia.

Evidence of COLLIA, *Mouzahdar, Ekratooli,—dated 28th January* 1870.

No disease at present. Has had no disease in his mouzah. Has charge of three villages, Doundhai, Bindakotia, and Ekratooli.

The cattle of his villages are grazed separately from those of adjoining mouzahs. They are separated by the Lessa river and distance. There is disease in one locality, Decumbari, north of the river, about two miles from his place. Says there are three kinds of disease, but does not know much about them.

Mathbas.

Evidence of MATHBAS, *Mouzahdar of Meripittar,—taken 29th January* 1870.

Has no disease in his village. Lost a great number of cattle from disease 15 years ago. The symptoms then observed were the same which cattle now exhibit. The disease occurred in May. The only difference between these two visitations is, that formerly the outbreak and disease ran through their course more rapidly than now. The few cattle which recovered then lost their hair and got a new coat. Half a day was the average duration of a case at that time. Says that the cattle of his village are not allowed to mingle with the cattle of neighbouring villages, in consequence of a Police order to that effect. Describes three forms of disease, according as the ears, eyes, or bowels are affected.

MADARKHAT.
Sadun Chunder.

Evidence of SADUN CHUNDER, *Sherishtadar in the Political Agency of Debrooghur,—dated Madarkhat, 30th January* 1870.

Question.—How long have you been in the district?

Answer.—I am a native of this District, Debrooghur. I live about one mile from the town of Debrooghur.

Question.—Do you own cattle, both buffaloes and cows?

Answer.—Yes, both buffaloes and cows.

Question.—How many of each do you own?

Answer.—I had 30 cows at the time the disease broke out, and about 20 buffaloes.

Question.—Have you lost cattle during the present outbreak; if so, how many?

Answer.—Out of my 30 cows, 22 died, but none of the buffaloes were attacked, they being in a different place.

Symptoms.

Question.—What were the symptoms of the disease your cattle died of?

Answer.—The first symptom of the disease that I noticed was a long, loud cough, and then the ears began to droop; there was running from the eyes, they were off their feed, but had great thirst, some of the animals even purged a great deal, but in other cases the bellies of the animals were greatly distended. In those cases in which purging commenced from the first, some of them, say from 30 to 40 per cent., survived. I never saw any eruption in the cattle in the first instance, nor even in those which had purging from the first attack; but in those which were attacked without purging, I noticed that 3 or 4 days after refusing food pustules appeared on the ears, and also scabs on the body, but no matter came from any part of the body. The mouth was full of sores.

Question.—Please state your opinion as to the origin of the disease?

Answer.—I am of opinion that my cattle were affected from being sent into Debrooghur for water at the time the disease was raging there.

Question.—In what months were your cattle attacked?

Answer.—In the month of Assar (June).

Question.—Did all your cattle die of the same disease?

Answer.—Ye , all the 22 that I have referred to died of the same disease; but I would here say that some of them were already weak from the foot and mouth disease.

Varieties of disease.

Question.—Are you aware of any other epizootic disease prevalent amongst cattle?

Answer.—Yes, foot and mouth disease—*sobakar;* swollen throat—*sookan bakoolier;* swelling of joints—*bish bakoolier:* in this latter there is purging, the swelling is hard. This disease takes place after the hard work in ploughing.

MADARKHAT.
Sadun Chunder.

Question.—Have you ever before met with a like disease?

Answer.—The murrain which we had before was not the same as this; there was no thirst, and it was more fatal; there was no running from the eyes and nose; there was bad discharge, but no dysentery; there were sores in the mouth: this was about 15 years ago. I never heard of the disease before in this part of the country, though my father said that he had heard of it lower down the country.

Contagiousness.

Question.—What is your opinion as to the disease being infectious or otherwise?

Answer.—I am of opinion that the disease is highly infectious, and that cattle can catch it from drinking at the same water as diseased cattle, even if the watering-place is at a running stream. I do not know of any cases in which the disease has broken out spontaneously; cattle catch the disease from going to the same pastures and watering-places as diseased cattle. The disease generally shows itself in 3 days, but if a dead animal is left, and other cattle are allowed to go near it, the disease will show itself in one day.

Question.—Do you know of any mode of treating the sick cattle?

Answer.—I do not know of any cure.

Question.—Do you know of the disease being communicated to any animals other than cattle?

Goats, &c.

Answer.—There were goats, pigs, and deer dead of the same disease. Two kids I remember died without any purging; but I have never seen any case in which cattle have died in which there has not been purging sooner or later.

Futtick Ram.

Examination of FUTTICK RAM, *Mohurir, agriculturist at present,—dated Madarkhat,* 31*st January* 1870.

Question.—Are you a native of this place?

Answer.—I am a resident of this place.

Question.—What is your age?

Answer.—I am 40 years of age, and always lived here.

Question.—Are you an owner of cattle?

Answer.—I am an owner of cattle.

Question.—How many cattle did you own six months ago?

Answer.—I had 26 cattle before the disease.

Mortality.

Question.—How many have you got now?

Answer.—I have five now.

Question.—What has happened with the rest?

Answer.—The rest died of the disease.

Question.—What disease did they die of?

Answer.—*Hija, mowar* or *jahani.*

Symptoms.

Question.—Describe the symptoms of the *hija?*

Answer.—Refused food; drooping head; refused water; on the third day purging commenced, offensive odour from the mouth, excoriations on the tongue and gums, and a running from the nose and eyes; at first the stools were of a light color, and afterwards bloody; the cattle died some in two, some in three days, but some have lived as long as six days.

Question.—Did any of the cattle attacked recover?

Answer.—Three recovered out of the 23 attacked.

Question.—Did you adopt any mode of treatment?

Answer.—I washed their mouths out with warm water and gave them tender grass to eat.

History.

Question.—Did you hear of any such disease before?

Answer.—When I was a boy I heard of the disease; I mean when I was 20 or 23 years old.

Question.—Did many cattle die of that disease?

Answer.—Many cattle died then; more than those which have died now.

Question.—How did your cattle catch the disease?

Answer.—My cattle got the disease from those belonging to Mr. White; they did not graze in the same land; the other cattle of the village grazed in the same ground as mine, but mine were the first to get the disease. The land on which my cattle fed bordered on that on which Mr. White's fed, with no fence but a road between them. Mr. White's cattle fed in the garden and also on the pittar.

MADARHAT.
Futtick Ram.

Question.—How did Mr. White's cattle get the disease?

Answer.—They went into Debrooghur.

Price of cattle.

Question.—What was the price of cattle 10 years ago, and what now?

Answer.—The cattle which would have cost Rs. 10 or 12 ten years ago, would now cost Rs. 16 or 20.

Question.—To what cause do you ascribe this rise in the price of cattle?

Answer.—I attribute the rise in price to the disease in cattle.

Question.—Are you of opinion that the present disease will cause a further increase in the price of cattle?

Answer.—I am of opinion that the price of cattle has risen owing to this disease. [Cannot say why he thinks so.]

Question.—After the murrain 15 years ago, were cattle imported from other districts, or have they since been imported?

Answer.—I do not know that they were.

Infectiousness.

Question.—Do you consider the disease to be infectious?

Answer.—Yes, I think that it is, because it has spread from one place to another.

Question.—Do you know of any instance in which people, in order to escape from the effects of the plague, have driven their cattle into the jungles?

Answer.—No, I do not.

Question.—Do you think that disease might break out in a distant place without being brought by infection?

Answer.—No, not unless there was communication of some sort or other; but I do not think that a man passing from diseased cattle to healthy ones could take the disease.

Question.—Are you aware of any like disease breaking out in the interim?

Answer.—I have only known two occasions on which this disease has broken out, 16 or 17 years ago, or more.

Ordinary mortality.

Question.—When there is no plague, how many in 20 die from ordinary causes in one year?

Answer.—Two or three old ones and two or three calves.

Question.—How are your cattle fed and watered?

Answer.—In the day they go to the common grazing ground; they come home in the evening and are given dhan and water.

Question.—Did wild animals ever kill your cattle?

Answer.—No.

LAHOWL.
Doni Ram.

Evidence of DONI RAM, *Mohurir of the Muttuck Tea Company Limited, Lahowl, 6 miles south of Debrooghur,—taken 31st January* 1870.

Question.—Are you a native of this district?

Answer.—Native of Lahowl; been in the employ of the Muttuck Company for 10 years.

Question.—Do you own cattle?

Answer.—I owned 23 head of cattle—8 bullocks, 4 cows, and 11 young stock—before the plague; now 7 head of cattle—5 bullocks and 2 cows. I had 7 buffaloes, the whole of which have died.

Question.—Of what disease have your cattle died?

Answer.—They died of *hija* or *jahani*.

Question.—Describe the symptoms of the disease as observed?

Symptoms.

Answer.—I first noticed a cough, drooping ears, loss of appetite, staring coat, discharge from nose, froth from mouth, like a cold. After three days diarrhœa or dysentery supervened. I observed shivering also.

Question.—Did you notice any eruptions on the bodies of your cattle when they were sick?

Answer.—I did not observe any eruption on the bodies of my cattle.

Question.—Out of the remaining seven cattle were any attacked?

Answer.—Two suffered from a slight manifestation of the disease, drooping of ears and refusal of food, but the bowels were not affected.

Question —How did your cattle get the disease?

Answer.—I cannot say.

LAHOWL. Doni Ram.

Question.—Was there any sickness among the cattle in the neighbourhood of your house at the time?

Answer.—Mr. White's cattle were attacked before mine.

Question.—In what month did Mr. White's cattle have the disease, and when did your cattle catch it?

Answer.—Mr. White's cattle in Kartick (October), and mine in Agran and Pous (November and December).

Question.—Was there any communication between your and Mr. White's cattle?

Answer.—Yes, Mr. White's cattle would come to my premises, and they grazed and watered in the same *khall.*

History.

Question.—Did you ever know of any such disease before?

Answer.—15 or 16 years ago a great many cattle died from the same disease.

Question.—Did more cattle die then than in the recent plague?

Answer.—More have died on this occasion.

Question.—Has any like disease prevailed in the interval?

Answer.—No disease of this sort has prevailed in the interval.

Question.—How did Mr. White's cattle get the disease?

Answer.—Can't say; but Mr. White's bullocks went to Debrooghur, where the disease had been prevailing, two or three times.

Question.—Do you consider the disease to be infectious?

Answer.—I don't know.

Price of cattle.

Question.—What was the price of cattle 15 years ago, and the price now?

Answer.—A cow that would cost some 6 or 7 rupees 15 or 16 years ago, would cost 15 to 20 rupees now. I attribute the increase of price to the loss of cattle.

Question.—Has the price increased already from the present murrain?

Answer.—Cattle have not been bought and sold as yet, as the agriculture has not commenced.

Cultivation.

Question.—From the number of cattle that have died during the present murrain, do you think that less land will be cultivated?

Answer.—People will have to purchase cattle to carry on the full amount of cultivation.

Question.—Are you a cultivator of land?

Answer.—Yes, I cultivate 28 beegahs.

Question.—How many bullocks are requisite to cultivate that amount of land?

Answer.—Eight bullocks.

Question.—How many more bullocks will you have to buy for tilling your land?

Answer.—Three more.

Question.—How do you expect to get them?

Answer.—Wherever the disease has not been.

Question.—How much do you expect to give for them?

Answer.—About Rs. 20 each.

Question.—How are your cattle fed, and are they housed or not?

Answer.—They go out grazing at will in the common. At night they are tied up in a shed.

Question.—When plague does not prevail, how many cattle die out of 20?

Answer.—In ordinary years two or three die in a score.

Question.—If you have 20 cows, how many calves would you expect to have in one year?

Answer.—Sometimes 10, sometimes 20, according as cows bear every year or every two years.

Breeding.

Question.—Do you take any special care in regard to the breeding of your cattle?

Answer.—No special arrangements are made for breeding. Bulls and cows graze together.

Question.—Had you any bulls of your own?

Answer.—I keep no bulls of my own.

Question.—Taking cattle generally, what is the proportion of male to female cattle?

Answer.—I can give no opinion.

Question.—Out of 20 male animals, how many are left entire and how many are gelt, and at what age are they gelt?

Answer.—After three or four years all are gelt.

LAHOWL.
Doni Ram.

Question.—Have you ever had any cattle imported to your place from other districts?

Answer.—No.

[NOTE.—Mr. Myers, Manager of the Muttuck Tea Company, attended to assist the examination of this man; as Mr. Myers has recently joined his appointment, he is not able to give any information.]

MADARKHAT.
Muliah.

Evidence of MULIAH, *Mouzahdar of Jugibahar,—taken on the* 31*st January* 1870 *at Madarkhat.*

Question.—Are you a native of the district?

Answer.—I am a native of this place.

Question.—Do you own cattle, both buffaloes and cows?

Answer.—I am an owner of cattle, having 12 cows and 15 buffaloes. I have had as many as 18 cows and 20 buffaloes; at present I have only 2 cows and 1 buffalo, the rest having died within two months, *i. e.*, in Aghan and Pous (November and December).

Question.—What did they die of?

Answer.—There was only one disease, though there were different symptoms, and we have two names for these, *hija* and *mowar*.

Symptoms.

Question.—What are the symptoms of *hija* as observed by you?

Answer.—First, short dry cough, drooping ears, refuses food, but has great thirst; watering from eyes, nose, and mouth; watery and oily stools mixed with blood, of a red colour; a few of the animals had sores on the back between the shoulders, sores in the inside of the mouth on both sides, but not in the feet. The disease lasted from 6 to 9 days, in some cases only 3 days; all my cattle that were attacked died. One or two lived as long as 12 days after they were attacked. The cattle were uneasy, but I cannot say whether they were in pain or not.

Question.—Describe the symptoms of *mowar* as observed by you?

Answer.—I cannot give any difference between *hija* and *mowar*.

Question.—Did you ever before see any such disease in your part of the country?

History.

Answer.—Yes, I saw the same disease 15 or 16 years ago, but this is a more severe attack than that.

Question.—Did any other sort of murrain come under your observation?

Answer.—I do not know of any other sort of cattle plague.

Question.—How did your cattle get ill?

Answer.—I know of no cause.

Question.—How do you feed your cattle?

Answer.—I turn out my cattle to graze where they like on the common with other cattle of the village; they get nothing but what they pick up.

Infectiousness.

Question.—What is your opinion as to the disease being infectious or otherwise?

Answer.—I don't know.

Question.—Where do you water your cattle?

Answer.—At the river.

Question.—How and where are your cattle housed during the night?

Answer.—At night they are always shut up in a house.

Question.—What is the extent of the mouzah under your charge, also the number of inhabitants and the number of cattle?

Answer.—The mouzah contains about 8 or 10,000 beegahs, and the inhabitants are between 1,100 and 1,200, and own, I should think, 7 or 800 bullocks, 1,000 or 1,200 cows, and 5 or 600 buffaloes. In the 8 or 10,000 beegahs I do not include jungle lands. I should think that every year some 1,000 or 1,200 beegahs out of the 8 or 10,000 were left uncultivated. One pair of bullocks could cultivate about 12 beegahs in the year. I cannot say whether the mortality in this mouzah has been sufficient to interfere with the cultivation.

Question.—Has the price of cattle risen since the prevalence of the plague?

Price of cattle.

Answer.—I cannot say, as at this time of the year no purchases are made; when the time for cultivating comes round then we shall see.

Question.—What was the price of cattle 10 years ago, and what is the present price?

Answer.—The cattle which 8 or 10 years ago would have cost Rs. 10 or 12, now cost Rs. 20 or 25.

Question.—To what cause do you ascribe the rise in the price of cattle for the last 8 or 10 years?

Answer.—I attribute this to the disease of 15 years ago.

Question.—Do you take any special care with regard to the breeding of your cattle? MADARKHAT. Muliah. Breeding.

Answer.—No, I do not; the cows and bulls herd together, the same with the buffaloes. I do not know anything of wild buffalo bulls.

Question.—How is your mouzah supplied with cattle?

Answer.—I purchase my cattle in the neighbouring villages.

Question.—Have you ever had cattle imported to your mouzah from other districts?

Answer.—I am not aware of any cattle having been imported into this from other districts.

Evidence of BORICK, *Mouzahdar of Madarkhat, taken on the 31st January* 1870. Borick.

Question.—Are you a native of this district?

Answer.—I am a native of this place.

Question.—Do you own cattle, both buffaloes and cows?

Answer.—I am an owner of cattle, having had 6 bullocks, 3 cows, and 8 buffaloes; at present I have only got one bullock, the rest having died in Pous (December) last.

Question.—What did they die of?

Answer.—They died of *jahani* and *mowar*; they are the same disease.

Question.—What are the symptoms of *jahani* or *mowar* as seen by you? Symptoms.

Answer.—At first the animal looks stupid and droops its ears, has a dry cough, refuses food, but has not unnatural thirst; has watery stools, sometimes mixed with blood, and dies in 8 or 10 days; sometimes in 3 days.

Question.—Did any of your cattle which were attacked recover?

Answer.—Only one out of all my cattle which were attacked recovered; the only symptom of the disease which it showed was, that it refused food for three days.

Question.—How and where do your cattle get food and water?

Answer.—The cattle feed on the common ground; they drink at the river; they are not stall-fed.

Question.—How did your cattle get sick? Origin of disease.

Answer.—The disease came to my mouzah through Jugibahar Mouzah, where the cattle were ill; the cattle of the two mouzahs feed and water at the same places.

Question.—What is your opinion of the disease being infectious or otherwise? Infectiousness.

Answer.—The disease comes from infection, and also breaks out spontaneously in particular cases.

Question.—Did any cattle plague ever visit your country before?

Answer.—The disease was here some 15 years ago, breaking out in Debrooghur Station; the disease was the same as that now prevailing.

Question.—Did more cattle die then than the number that died in the recent plague?

Answer.—About the same number of cattle died in both attacks.

Question.—Did the plague appear first in your mouzah?

Answer.—It has never in the first instance broken out in my village; it has always been imported from other villages.

Question.—Have any cattle died of this disease in your village in the interval?

Answer.—No cattle have died of this disease between the attack of 15 years ago and this outbreak.

Question.—You say you are 40 years old; now, what was the price of cattle when you were young? Price of cattle.

Answer.—The cow that would have cost Rs. 7 when I was a boy, would now cost Rs. 20 or 25.

Question.—When did the price begin to rise?

Answer.—The price began to rise after the murrain of 15 years ago.

Question.—Has the price risen owing to this murrain?

Answer.—I cannot say, as no purchases are made at this time of year, but I expect to have to give from Rs. 20 to 23 for a bullock and from Rs. 16 to 20 for a cow.

Question.—Has the price of buffaloes risen since you were a boy?

Answer.—Yes, a buffalo which would have cost Rs. 20 or 25 when I was a boy, would now cost Rs. 100.

MADARKHAT.
Borick.
Cattle dealing.

Question.—Where do you get your cattle from?

Answer.—I purchase cattle all round in the neighbourhood, but always choose a village where no disease has shown itself.

Question.—Where do the ryots and mouzahdars get their buffaloes from?

Answer.—From the Naga Hills.

Question—Have any Bengalee buffaloes ever been brought to your part of the country?

Answer.—I have not seen any, but I have heard of them.

Question—In healthy years how many cattle die from the effects of old age out of 20?

Answer.—One or two in 20 generally from old age.

Question.—What increase of cattle would you expect from the same number during the same time, say 20 cows?

Answer.—I should expect one calf from each cow—half and half, male and female.

Question.—If a man owns 20 head of cattle, how many of them would be bullocks and how many cows on an average?

Answer.—There would be more cows than bullocks as a rule.

Question.—Do you ever use a cow in the plough?

Answer.—Cows are not used in the ploughs, not even the barren cows.

Breeding.

Question.—Do you take any special care with regard to the breeding of the cattle in your mouzah?

Answer.—No special care is taken in breeding; the cow goes to any bull.

Question.—Out of 20 male calves, how many would be left entire and how many gelt?

Answer.—None are gelt till 3 years old; then all are gelt, with the exception of one which is picked out as the finest.

Question.—Did you adopt any mode of watering and feeding during the murrain?

Treatment of sick.

Answer.—No treatment, with the exception of giving them boiled rice, green grass and warm water.

Question.—Is the water given to the cattle sweet or brackish?

Answer.—The water in the mouzah is good, not salt.

Question.—Are there a sufficient number of cattle left in your mouzah to carry on cultivation without purchasing from others?

Answer.—No, a great number will have to be purchased; I should think about 7 to each house.

Question.—Have you any idea of the number of cattle in your mouzah?

Answer.—No, I cannot say.

Exemption of one village.

Question.—You say that there is a village in your mouzah where there has been no disease; to what cause do you ascribe this circumstance?

Answer.—The cattle belonging to it were taken into the jungle away from all others, and are there still; they were so taken when the disease showed itself in the villages near theirs. They are about two miles in the jungles; the owners took them there of their own accord, having heard that another man had saved his by so doing.

Cause.

Question.—How did you dispose of the cattle that died?

Answer.—I buried them three or four *haths* deep. I did not do so before the disease. All the villagers do so now, because the Deputy Commissioner has so ordered.

Evidence of Villagers of Madarkhat, 1st February 1870.

JONMIE COLETA, OMOR GOPIE, MOGONA DHOOLIA. HINGI GOPIE, PAD BOR ATOME, LOYBOR GHURPOOLIA, BOOCKOO LATONE, PICK GOPIE, KOOLA GOPIE, JOORMOHUN DHOOLIA, SOOKMUL GOPIE, PIABOR ATOME, DEEN COLETA, BANCHA ATOME, AND ROOPYE COLETA, all residents of Madarkhat, state as follows:—Have had opportunities of observing the symptoms of the disease, as every one of them lost some of their cattle from the effects of the plague. The symptoms, as seen by them, are,—drooping ears, running from eyes, nostrils, and mouth, coughing slightly, and passing watery and bloody stools. The diseased cattle would refuse food, and die from the 3rd to the 12th day. They consider the disease to be infectious. The sick were not treated in any way by them; they had observed a like disease somewhere about 15 years ago. They did not notice any eruption on the skin of the diseased animals.

[NOTE.—The rest of the evidence given by these witnesses being exactly the same as that already recorded, it was considered unnecessary to write further].

MADARKHAT.

Examination of LAHOR, *a cultivator of Madarkhat, taken on 1st February* 1870.

Lahor.

Question.—Are you a native of this place ? and what is your age ?

Answer.—I was born here and have lived here ever since. About 55.

Question.—Do you own any cattle ?

Answer.—Yes, I am an owner of cattle ; I had 9, but 8 of them have died.

Question.—What did your cattle die of, and when ?

Answer.—They died of *jahani* in Pous (December.)

Question.—Describe the symptoms of the disease as seen by you ? Symptoms.

Answer.—Their ears drooped, they had a running from the eyes and mouth, refused food, had great thirst, frequent stools, afterwards mixed with blood, when they died.

Question.—Did you adopt any mode of treatment for curing the disease ?

Answer.—Did not try any treatment.

Question.—In how many days did your cattle die ?

Answer.—They died in from three to eleven days ; did not notice that they had any eruption in any part of their bodies.

Question.—To what cause do you ascribe the disease ?

Answer.—Do not know why they died ; the cattle round about died, and so they died. I heard that the disease first showed itself at Debrooghur. Infectiousness.

Question.—Do you consider the disease infectious ?

Answer.—I am of opinion that the disease is infectious, because it came to our village from Debrooghur.

Question.—Did you ever see any such disease before ?

Answer.—Yes, about 12 years ago, the same disease as this ; but in my opinion the disease was not as severe on that occasion as on this.

Question.—How much land have you under cultivation, and how many cattle would be required to cultivate it ?

Answer.—I have got three poorahs of land. I have only one bullock left ; one plough would cultivate two poorahs. I have no money to buy fresh cattle, and consequently I shall have to dig the land myself.

Question.—Where do you get your supply of cattle from ?

Answer.—In the surrounding villages where there has been no disease.

Question.—Do cattle dealers come to your place to buy or sell cattle ?

Answer.—No, people come to buy cattle for their own use.

Question.—How are your cattle fed, watered, and housed ?

Answer.—Grazed in the common ground during the day ; at night brought into the house and fed on straw ; get water at any place they can.

Question.—How do you breed your cattle ?

Answer.—No care is taken with regard to the breeding.

Question.—Do you think the people will have to buy cattle in order to carry out their cultivation next season ? Cultivation.

Answer.—There are not enough cattle left in my village to carry on the cultivation.

Question.—What is the price of cattle now, and what was it 15 years ago ?

Answer.—Cattle which would have fetched 15 years ago Rs. 7, would now fetch Rs. 20. Price of cattle.

Question.—What is the cause of this increase ?

Answer.—Cannot say, unless it is that money is cheaper now than it was then. I do not think that there are any more cattle in my village now than there were 15 years ago, and that more land has been brought under cultivation.

Question.—You have told the Commission that you consider the disease to be infectious. Do you think it would be better for the Government to interfere ?

Answer.—I should like Government to interfere, so far as it did not concern me.

Examination of MULOHA, *an agriculturist of Madarkhat, a resident of the place,—dated 1st February* 1870. Muloha.

Question.—Are you a cattle owner ?

Answer.—I am an owner of cattle. I had 12 head of cattle ; among them 6 bullocks and 6 cows. I have now 2 cows and 2 bullocks, the rest having died in Aghan (November) last of *jahani* or *mowar*. I had also 9 buffaloes, all of which have died.

MADARKHAT.

Question.—What were the symptoms of the disease ?

Symptoms.

Answer.—A cough, drooping of ears, watering from the mouth and nose, frequent stools—sometimes with blood, sometimes without, and death after 4 to 12 days.

Question.—Did you adopt any sort of treatment?

Answer.—I did not try any medicine with the cows or bullocks, but two doctors came and gave medicine to my buffaloes, but with no effect.

Question.—To what cause do you ascribe this disease ?

Answer.—I do not know.

Infectiousness.

Question.—Do you consider the disease to be infectious ?

Answer.—I consider the disease infectious, because I have noticed that it is communicated from one village to another.

Question.—Did you see a like disease before ?

History.

Answer.—Yes, about 12 or 15 years ago in this village.

Question.—Is there any hamlet near your village in which the cattle have not been affected?

Answer.—No, I do not know of any.

Question.—How many cattle were there in your village before the plague?

Answer.—Before this disease broke out there were 200 or 300 cattle in my village; now from 20 to 24. I cannot say how the cultivation will be carried on.

Question.—What is the present price of cattle, and what was it 15 years ago?

Answer.—The cattle which 15 years ago cost Rs. 5 or 6, now cost from Rs. 15 to 20.

Question.—What is the cause of this rise in the price of cattle?

Answer.—Cannot say, unless it be on account of the disease 15 years ago.

Breeding.

Question.—Do you take any special care as regards the breeding of your cattle ?

Answer.—No, no care; and if good bulls were imported, the people would not send their cows to them; what would be the use of it, a small bullock can do as much work as a big one. Even if there was no charge, I should not send my cow to the big bull.

Question.—After the appearance of this plague amongst them, did you let them loose and allow them to graze on the common pasture?

Answer.—Yes, I made no change.

Moosah Kolita.

Examination of MOOSAH KOLITA, *an agriculturist of Madarkhat,—dated Madarkhat, 1st February* 1870.

Question.—Are you an owner of cattle?

Symptoms.

Answer.—Yes, I am; before the disease I had 16 buffaloes, 8 bullocks and 12 cows, all of which have died; they all died in the month of Aghun of *jahani* or *murar*.

Question.—Please describe the symptoms of the disease as observed by you?

Answer.—Cough, drooping ears, watering from the eyes and mouth, watery stools, sometimes mixed with blood; they died in from 4 to 7 days.

Question.—Have you ever seen disease amongst any other animals?

Answer.—No, I have not.

Question.—How did your cattle get the disease?

Infectiousness.

Answer.—The disease came from Debrooghur.

Question.—Then is the disease in your opinion infectious?

Answer.—Yes, I think that it is, because it was communicated from village to village.

Question.—How many cattle were there in your village before the plague? how many are there now?

Answer.—Before the disease broke out I should think that there were 400 or 500 head of cattle in my village, now there are only about 20. I do not know how the cultivation will be carried on.

Question.—What is the price of cattle now, and what was it 15 years ago?

Answer.—Cattle are the same price now as they were 10 or 15 years ago.

Evidence of HOOD GOSSAIN, *aged* 65 *years, a resident of Lahowl, and a Government Pensioner, Madarkhat,—dated* 2*nd February* 1870. MADARKHAT. Hood Gossain.

Question.—Have you any experience regarding the present cattle murrain?

Answer.—I have, and I lost nearly all my cattle from it. I lost 33 bullocks and cows and 18 buffaloes.

Question.—Did any of your cattle recover?

Answer.—Seven recovered.

Question.—Did any escape the plague? Segregation.

Answer.—Yes, 20 buffaloes that I sent away to a distant jungle escaped, and they remained all right in that jungle.

Question.—What is the name of the disease that attacked your cattle?

Answer.—It is the same disease, but that it has three different names, *viz.*, *jahani*, *mowar*, and *hija*.

Question.—Have these three kinds of disease different symptoms?

Answer.—No, they are one and the same fatal disease with three different names, and the symptoms are one and the same.

Question.—Please describe the symptoms of the disease? Symptoms.

Answer.—The very first symptom is,—off feed, great thirst, drooping ears, afterwards running from the eyes, nose, and mouth, sores inside the lips and mouth, and diarrhœa.

Question.—How many days does the disease take in running its course?

Answer.—From 5 to 16 days.

Question.—How many per cent. of the attacked recover?

Answer.—25 per cent.

Question.—Have you ever seen this disease amongst the cattle of this district in former years? History.

Answer.—Yes, I saw it 12 or 15 years ago, and I remember my father said it had occurred in 1830 or 1831.

Question.—Do you believe that the same disease occurred at three different times?

Answer.—Yes, the very same disease.

Question.—Was mortality as great in former years as now during the present attack?

Answer.—More cattle died in the attack 12 or 15 years ago; a fewer number died during the attack of 1830 and 1831.

Question.—What is the ordinary mortality amongst cattle in this district from ordinary causes?

Answer.—I should say 9 or 10, and this number includes losses of cattle which are killed by wild beasts.

Question.—As there are no cattle slaughtered in this district, and as the cattle are ordinarily so very healthy, and breed regularly, what is the increase per annum of stock?

Answer.—From 18 to 20 per cent.

Question.—Is the proportion of sexes with the young stock about equal?

Answer.—I should say about 2 cow calves to 1 bull calf.

Question.—As there are twice the number of cows to bulls, and breeding is carried on very regularly, to what amount will the stock increase in 10 years? Breeding.

Answer.—I have given you the scale, and you can make the calculation.

Question.—Do you think that there is a sufficient number of cattle in the country to carry on the cultivation?

Answer.—A rich man may be able to cultivate his lands, but it will be very difficult for the poor men to do so, and I fear that half the land will remain uncultivated.

Question.—But you have said that there is a yearly increase of the stock; and as the last murrain was 15 years ago, surely the additional stock of the interval will afford supplies for the present loss, even after deducting the number of cattle lost during the present attack?

Answer.—There is doubtless, from the increase of stock during the last 15 years, a sufficient number of cattle in the whole country; but in those districts where the murrain has prevailed, individuals of small means will have great difficulty in cultivating their lands.

Question.—What is the present price of cattle, and what was it 15 years ago? Price of cattle.

Answer.—The bullock that is now got for Rs. 20 to 30 fetched 15 years ago Rs. 5 to 7.

MADARKHAT.

Question.—To what cause do you ascribe the increase?

Answer.—To more land being brought under cultivation than before, and to greater demand for cattle.

DEBROOGHUR.
Mohun Gossain.

Evidence of MOHUN GOSSAIN, *aged* 40 *years, a resident of Lahowl, a farmer,—dated Madarkhat, Debrooghur,* 3*rd February* 1870.

Question.—Have you seen any of the cattle affected with, dying or dead from the murrain that is at present raging in this district?

Answer.—Yes, I have seen my own cattle die from this disease.

Question.—When did you see the disease first?

History.

Answer.—I saw it first about fifteen years ago.

Question.—After that, when did you see it next?

Answer.—I saw it next in last October.

Cause

Question.—What do you think to be the cause of this disease?

Answer.—I do not know whether it comes from a deficiency of food or water, or from bad food and bad water, or it may be in the air.

Question.—Well, 15 years ago, do you remember whether at that time there was a deficiency of food or water, or whether there was any special state of the atmosphere which might cause the disease? Were people affected with any epidemic at that time, or were other animals, wild or tame, affected with any similar disease?

Answer.—Human beings were not affected with any disease; but I saw dogs and pigs that had died from eating the carcasses of the diseased cattle. I remember that the disease came from the west.

Question.—Did the disease break out in Gowhatty or anywhere towards the west before it appeared here?

Answer.—Yes, I heard that the disease had at first appeared in Gowhatty, and this information I had derived from the dâk runners.

Question.—Where did you hear of the present outbreak first appearing?

Answer.—In Rungpoor—Seebsaugor.

Question.—Did you ever hear of the cattle belonging to the Naga and the neighbouring hill tribes being affected?

Answer.—No.

Question.—Which is the furthest point last where you have heard of the disease raging?

Answer.—At a place called Deenjoe, 5 miles off.

Question.—Did the disease first appear there or here?

Answer.—It broke out here at first.

Infectiousness.

Question.—Do you consider the disease to be infectious?

Answer.—Yes, animals can catch the disease by sleeping, feeding, and drinking together. I also know that my cattle caught it from a distance of 240 yards from the village cattle.

Question.—At the time that the village cattle were affected, did any of their attendants come to their cattle-sheds?

Answer.—Yes, they did.

Question.—Do you think that these attendants brought the infection with them?

Answer.—Yes, possibly; but in the case of my cattle, I believe that they caught the infection through the air being contaminated by the carcasses of the diseased village cattle being thrown out in the vicinity of my house. The stench from these was great.

Legislative interference.

Question.—Do you think the Legislature ought to interfere, in order to prevent the infection spreading from this murrain?

Answer.—Yes, the people ought to be ordered to isolate cattle suffering from infectious diseases, and to bury those that have died from these; and in the event of their not discharging the order, they ought to be fined.

Question.—Do you think the people would like to institute a local murrain fund by having a small tax, say one or two annas per annum per head of cattle, for the purpose of compensating owners of cattle for losses they may sustain by future outbreaks of murrain?

Answer.—Yes, I think the people would like to have a fund instituted by such means.

DEBROOGHUR.

Question.—You say you saw the disease 15 years ago; did you ever hear of any such disease before?

Answer.—Yes, my father told me that the same disease had raged in Rungpoor—Seebsaugor—at the time of the Native rule, before the English took possession of this country. I am not certain how long, but I think 10 or 13 years before.

Question.—Did the disease at that time break out at Lahowl and Madarkhat?

Answer.—No.

Question.—Was there any communication between Rungpoor—Seebsaugor—and these places?

Answer.—No, they were under different sovereigns and hostile to each other.

IMPORTATION OF BUFFALOES.

GOWHATTY.

From J. H. B. HALLEN, Esq., *Staff Veterinary Surgeon, President, Cattle Plague Commission, to the Commissioner of Assam; below Gowhatty, on board the Steamer "Koel,"*—(*No.* 150, *dated the* 15*th February* 1870). J. H. B. Hallen, Esq.

Importation of buffaloes.

The Commission have found during the course of their inquiry regarding the present cattle plague of Assam that it is generally believed that the plague was imported into Assam by some Bengalee buffaloes, I therefore have the honor to request that you will be so good as to obtain information on the following points:—

A. When, whence, and to what portion of Assam were the buffaloes said to be infected imported. Whether buffaloes said to be infected were imported on more than one occasion; and if so, state the number of buffaloes on each occasion and the number of times they were brought.

B. Time occupied from leaving Bengal to date of arrival in Assam.

C. Whether any plague had prevailed before or was prevailing at the time of the departure of the buffaloes from Bengal in the District of Bengal, whence the buffaloes came; and if so, which kind of plague.

D. Whether any of the batch of the imported buffaloes died in transit to Assam, or died from plague immediately or shortly after arrival in Assam.

The Commission will feel extremely obliged if you will obtain the best information on the above points from reliable sources, and, if possible, not from hearsay only, but from officers or persons who are able to record facts, or report what they themselves saw bearing upon the subject.

Colonel W. Agnew.

From COLONEL WILLIAM AGNEW, *Officiating Commissioner of Assam, to the President of the Cattle Plague Commission, Calcutta,*—(*No.* 118, *dated Gowhatty, the* 6*th April* 1870).

In reply to your reminder No. 205, dated 29th ultimo, I have the honor to forward copies of the reports received up to date from the officers who were required to furnish the information asked for in your letter of the 15th February last.

2. The report of the Deputy Commissioner of Luckimpore has not yet been received. It will be sent to you hereafter.

KAMROOP.

Major A. K. Comber.

From MAJOR A. K. COMBER, *Deputy Commissioner of Kamroop, to the Personal Assistant to the Commissioner of Assam,*—(*No.* 47, *dated Gowhatty, the* 22*nd March* 1870).

With reference to your Circular No. 35 of the 16th ultimo, I have the honor to state that on the receipt of it I issued perwannahs to a few of the selected Mouzahdars in the district, through whose mouzahs the Bengalee buffaloes are said to have been brought up for sale, and asked them to answer Dr. Hallen's questions. After careful personal inquiry, I now beg to submit extracts from their reports for the information of the Commissioner.

The Mouzahdar of Choyanee states that a drove of 125 buffaloes have recently been brought up to his mouzah from Sarun—Chuprah; that the drovers told him they took full two months to come up to Volashbaree; and that no plague broke out among them, nor did any death occur during their journey. The Mouzahdar personally inspected the herd, and found no disease whatever prevailing among them. The buffaloes were pulled down merely for want of food and from the fatigue of a long journey.

The Mouzahdar of Sila states that three batches of buffaloes from Bengal, about 900 in number, were brought to North Gowhatty last year on three different occasions. The drovers told him that they had taken nearly three months on their way from Bengal to Assam. The buffaloes had suffered from no disease, but they had become emaciated for want of food and from fatigue.

KAMROOP. Major A. K. Comber.

From the report of the Mouzahdar of Khátá it appears that only a week ago 300 buffaloes were brought there from village Neraraj, in Zillah Purneah, and that the sirdar drovers, named Bousee and Fondee, told him that they took two months to come up as far as Nulbaree. There was no disease prevailing among the herd.

The other Mouzahdars to whom perwannahs were issued on the subject state that no Bengalee buffaloes passed through their mouzahs during the past year.

Under the above circumstances, I am of opinion that the present cattle plague was not imported into this district by the Bengalee buffaloes.

DURRUNG. Major Thomas Lamb.

From MAJOR THOMAS LAMB, *Deputy Commissioner of Durrung, to the Personal Assistant to the Commissioner of Assam,*—(*No.* 1608, *dated Tezpore, the* 23*rd March* 1870).

With reference to your letter No. 35 of the 16th ultimo, conveying copy of a letter from Mr. J. H. B. Hallen, President, Cattle Plague Commission, dated February 1870, I have the honor to submit the information therein called for.

A. No record is kept of the number of buffaloes imported. They might be roughly estimated at from 200 to 500, on each occasion brought from the Districts of Bhaugulpore, Purneah, and Mozufferpore in February 1860, January 1865, March 1867, January 1868, and January 1869.

B. The time occupied from leaving Bengal to date of arrival in Assam is not known.

C. It is not known whether any plague was prevailing at the time of the departure of the buffaloes from Bengal.

D. Large numbers died immediately after their arrival in this district, and their bodies were lying in different places near the road. From inquiries made during my cold weather tour, I learnt that the disease was most severe in villages situated near the main line of road along which the buffaloes were taken. In 1867-68 a large number died within a few miles of Tezpore. The Commissioner requires positive proof of facts at this late date; all that could be obtained would be general statements of villagers which would be of no more value than what I heard in conversing with people while I was in the Mofussil. If necessary, some men can be sent for and their depositions taken on oath.

P. S.—The delay in submitting this reply to your letter is owing to my having called for reports from some of the Mouzahdars, which have only just arrived.

NOWGONG. Capt. F. B. Mitchell.

From CAPTAIN F. B. MITCHELL, *Officiating Deputy Commissioner of Nowgong, to the Personal Assistant to the Commissioner of Assam,*—(*No.* 107, *dated Nowgong, the* 18*th March* 1870).

In reply to your memorandum No. 35, dated the 16th ultimo, forwarding copy of a letter from the Cattle Plague Commission to your address, asking for information regarding the cattle disease in Assam, I have the honor to enclose a letter on the subject from my District Superintendent of Police, whom I had instructed to make inquiries regarding the several points on which information was required by the Commission. My own impression is that the disease was brought to this district from Bengal, as it broke out here immediately after the arrival of certain herds from that country.

From the Officiating District Superintendent of Police, Nowgong, to the Deputy Commissioner of Nowgong,—(*No.* 55, *dated Nowgong, the* 16*th March* 1870).

I have the honor to forward you the result of the inquiries made by the officer deputed by me relative to the information regarding the cattle plague required by the President, Cattle Plague Commission.

Importation of buffaloes.

A. During the months of March and April, in the years 1868, 1869, five herds of buffaloes, numbering from 80 to 150 in each herd, arrived in Nowgong from the Bengal Districts of Rungpore, Dinagepore, and Purneah, and amongst them were several diseased ones. On both occasions they came from Bengal *viâ* the District of Gowhatty and Jogee Police Station in this district. Whilst in this district, on both occasions they remained at the villages of Battodrobah, Kawaimaree, and Shansorah, until the animals were disposed of to purchasers, who took them to all parts of the district. During the two years also, some six batches, with diseased animals amongst them, came from the District of Rungpore and camped on the plain at the mouth of the river Meesha, in the jurisdiction of Koliabar Police Station.

B. The journey from Bengal to Assam occupied from 1 to 2 months.

Disease among them.

C. At the time of the departure of the buffaloes from the Districts of Rungpore, Dinagepore, and Purneah, there was a cattle plague prevailing there, and during the journey to Assam many of the animals died. The plague is described as follows:—

The animal first shows the symptoms by its difficulty in swallowing, and ultimately refusing food; a general dulness, swelling of the sides of the mouth, itchiness about the skin, which

NOWGONG.

gets covered with pustules of a brownish color; the animal would continually be heaving and unable to travel any distance; then would follow a liquid discharge of stinking fæces; when this purging increased, the animal's breath would become offensive and it would gradually get worse and stagger, until it fell and succumbed to the disease.

D. Some of the cattle in these batches died in transit, and some on arrival, the latter being those that were the most debilitated; their deaths are attributed to the above described disease.

All the above information has been obtained from the villagers of Battodrobah, Kawaimaree, and Shansorah, at which places the traders camped, and which appears to me to be a reliable source.

From the description of the disease, it appears to me to be the murrain or pestilential fever which is at times so common in England.

From CAPTAIN A. E. CAMPBELL, *Deputy Commissioner of Seebsaugor, to the Personal Assistant to the Commissioner of Assam,—(No. 232, dated Seebsaugor, the 10th March* 1870). SEEBSAUGOR. Capt A. E. Campbell.

I have the honor, with reference to your Circular memorandum No. 35, dated 16th ultimo, forwarding copy of a letter from the President of the Cattle Plague Commission, to the Commissioner of Assam, to forward copy of a letter, No. 36, dated 7th instant, from the Assistant Commissioner of Golaghat.

2. The information given by that officer of the importation of Bengalee buffaloes into this district is all I know; and as the disease for a long while was entirely confined to the vicinity of Golaghat, I can state nothing from my own personal observation.

From LIEUTENANT L. BLATHWAYT, *Assistant Commissioner of Golaghat, to the Deputy Commissioner of Seebsaugor,—(No. 36, dated Golaghat, 7th March* 1870). GOLAGHAT. Lieut. L. Blathwayt.

In reply to your memorandum No. 162, dated the 19th February 1870, forwarding copy of a letter from the President, Cattle Plague Commission, to the address of the Commissioner of Assam, I have the honor to report as follows.

2. In the month of March 1869, some three hundred buffaloes were brought to this sub-division from Bengal. They were halted in the Mouzah of Bokakhat, and a few were sold there. A few days after their arrival the cattle disease broke out in this mouzah. Importation of buffaloes.

3. So far as I have been able to ascertain, the Bengalee buffaloes did not themselves suffer so much from the disease as the Assamese; but the fact that the appearance of the disease in this sub-division was nearly simultaneous with the arrival of the Bengalee buffaloes, and in the very places to which they were brought, had led me to believe that the plague was imported by them. Disease brought by them.

4. I regret I am unable to give reliable information on any of the other points mentioned by the Commission.

From MAJOR R. STEWART, *Deputy Commissioner, Shillong, to the Personal Assistant to the Commissioner of Assam,—(No. 136, dated Shillong, the 25th February* 1870). SHILLONG. Major R. Stewart.

With reference to your memorandum No. 35, dated 16th February, and its enclosure, I have the honor to state that no buffaloes appear to have brought the cattle disease into this district, these animals not being used in these hills, and never passing through them.

From A. C. CAMPBELL, Esq., *Assistant Commissioner of Burpettah, Assam, to the Personal Assistant to the Commissioner of Assam,—(No. 249 A, dated Camp Kana Koosi, the 19th February* 1870). ASSAM. A. C. Campbell, Esq.

In reply to your memorandum No. 35, dated 16th instant, I have the honor to forward the following information on the points referred to in Mr. Hallen's letter to your address, on the subject of the alleged importation of the cattle plague into Assam by means of infected buffaloes from Bengal.

Answer.—I saw several herds of buffaloes passing through the sub-division at different times from December 1868, when I assumed charge here, to March and April 1869. The owners said that they had come from Dinagepore, Purneah, and Rungpore, and were proceeding to Upper Assam to dispose of their cattle. I had no reason to believe that the cattle in these herds were infected. I had no opportunity of ascertaining the precise number of cattle which passed through on these occasions, nor can I say how many herds passed through; but on a rough calculation, about 600 or 700 head of buffaloes passed through during the period above specified. Question 1.

ASSAM.
Question *B.*

Answer.—The buffalo owners, on the occasions on which I questioned them on this point, intimated to me that the time occupied by them in reaching Burpettah from their homes averaged from a month to six weeks, as they had to travel slowly in order to obtain pasture for their cattle.

Question *C.*

Answer.—Of course, if any plague was prevailing in Bengal at the time of the departure of the buffaloes, it is not likely that the owners would furnish any information as to the nature of the plague, or admit that there was any plague at all; and on this head people in Assam had no means of obtaining information, except through the buffalo owners themselves.

Question *D.*

Answer.—The buffaloes which passed through the sub-division appeared to me in weakly condition, caused evidently by insufficient pasturage. I saw several dead and dying animals on the track through which they passed. In every instance the body seemed a mere skeleton. In all instances of death from cattle plague which I witnessed in Assam during the great plague of 1852-53, the animals lost nothing in flesh, and, generally speaking, the weakly were exempt from the disease, while those in good condition were stricken down. I have not the least hesitation, therefore, in expressing my belief that the mortality among imported buffaloes on the way and after they were sold was not caused by plague, but from the effects of neglect and insufficient food during their long march from Bengal to Upper Assam.

In conclusion, I may mention that one of the buffalo owners who passed through the sub-division towards Upper Assam in the early part of last year, returned about the beginning of June with the greater portion of his herd of buffaloes, which he informed me he was about to take back to his country, as the people in Central and Upper Assam were prejudiced against buying them, owing to the belief that they were plague-stricken. On arrival at Burpettah, this man found his further progress homeward arrested by the country being inundated, and as he and his companions were all suffering from fever, he disposed of his buffaloes at Burpettah at a very great reduction in their value, and, with the exception of a few weakly ones so purchased, they are all (over a hundred in number) at this present time in capital condition.

MUNGLEDYE.
J. J. S. Driberg, Esq.

From J. J. S. DRIBERG, Esq., *Extra Assistant Commissioner, Mungledye, to the Personal Assistant to the Commissioner of Assam,*—(*No.* 492, *dated Mungledye, the* 21*st February* 1870).

I have the honor to acknowledge the receipt of your Circular memorandum No. 35 of the 16th instant, forwarding copy of a letter from the President, Cattle Plague Commission, and in reply thereto beg to submit the following remarks:—

2. I am unable to give any reliable information in answer to the questions put by the members of the Commission.

3. Several herds of Bengalee buffaloes travel through Mungledye annually between November and February, and sometimes as late as March. In Mungledye the plague broke out towards the latter part of April 1867, so that it can scarcely be attributed to buffaloes passing through a month earlier; and at this late period it is impossible to obtain any trustworthy information on the subject, or to collect facts to show whether the importation of Bengalee buffaloes brought the disease into the province in 1867.

4. I may state, however, that I have seen several herds of buffaloes passing through to Upper Assam, but never noticed any mortality amongst them. Had any large number died on or alongside the Government road in 1867, it would have been brought to notice, and the absence of any such information leads me to conclude that the mortality was not very great. Last year I believe the owners lost a larger number of buffaloes than usual; but the cattle plague was not raging in Mungledye, nor did it show itself immediately after.

5. I am not aware of any buffaloes already infected having passed through Mungledye.

NORTH LUCKIMPORE.
John Campbell, Esq.

From JOHN CAMPBELL, Esq., *Extra Assistant Commissioner, North Luckimpore, to the President, Cattle Plague Commission, Sudder Street, Calcutta,*—(*No.* 23, *dated Luckimpore, the* 22*nd March* 1870).

With reference to your letter to the Commissioner of Assam, dated on board the *Koel*, below Gowhatty, I have the honor to furnish you such information as I am able on the points therein referred to.

2. I have been unable to ascertain whence the batch of buffaloes that passed through the sub-division in March last were brought. The buffaloes were taken to the Seebsaugor District, across the "Majoli," to Golaghat. The batch was, I believe, the first introduced into the sub-division for many years. There is ordinarily no importation from Bengal.

3. I regret that I am quite unable to supply you with reliable information on the points *B* and *C*; I did not at the time inquire into them.

4. I believe several buffaloes died in the Durrung District prior to their arrival in the sub-division. One died in the sub-division just where the first outbreak occurred. It is said to have died of the plague, and I have no reason to doubt the correctness of the statement.

DEBROOGHUR.
Captain John Gregory.

From CAPTAIN JOHN GREGORY, *Deputy Commissioner of Luckimpore, to the Personal Assistant to the Commissioner of Assam,—(No.* 31, *dated Debrooghur, the* 14*th April* 1870).

I have the honor with reference to your memorandum No. 35 of 16th February last, to forward a copy of a letter from Mr. Campbell, in charge of the Sub-division Luckimpore, where the cattle plague first broke out in this district.

2*nd.*—Last year, on my journey to Debrooghur through the Sub-division of Golaghat, I observed that many head of cattle had died in the Mouzahs of Nohoronie and Deorgaon, in the Seebsaugor District. On my asking some of the native gentlemen whom I met on the road as to the cause of the death of the cattle, I was informed that a batch of diseased Bengalee buffaloes had been brought to Nikree Chapree, where the Awniatee Gossain's buffaloes were grazed, and that the disease had spread to them, and from them to the cattle of Nohoronie and Deorgaon Mouzahs.

3*rd.*—Where these Bengalee buffaloes were imported from, neither Mr. Campbell nor I can say.

LUCKIMPORE, NORTH
John Campbell, Esq.

Extract from letter from JOHN CAMPBELL, Esq., *Extra Assistant Commissioner, North Luckimpore, to the Deputy Commissioner of Luckimpore, Assam,—dated* 8*th April* 1870.

"On points *B* and *C* of the Cattle Plague Commission's letter I can give no information at all. No inquiries were made at the time, and it is impossible now to get any reliable information.

"I can only state that a batch of buffaloes was introduced into the Narainpore Mouzah of this District at the end of March 1869; whence they came I cannot say, except that they came from some district of Bengal. The batch was brought through the Durrung District and taken into Golaghat. This is the first importation of buffaloes into the sub-division for very many years.

"I cannot say if any buffaloes died in transit to Assam or not; I heard of deaths in the Durrung District, and one died just after its arrival in Narainpore Mouzah, the plague breaking out soon after."

NORTH-WESTERN PROVINCES.

BENARES DIVISION,

COMPRISING THE DISTRICTS OF BENARES, AZIMGURH, GORUCKPORE, BUSTEE, AND MIRZAPORE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	... ...	Page 343.
Benares.	*Collector of Benares* ...	...	22*nd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 216. *Reports that no disease prevails.*
	Secretary to the Government of N.-W. P.	119*a*	24*th June* 1869 ...	*A report regarding the murrain,* chechuck, *which broke out in the Benares District in October* 1868, *and the result of a village-to-village inquiry.*
	A Shakespear, Esq., Commissioner of Benares	102	12*th May* 1869 ...	
	M. Brodhurst, Esq., Officiating Collector of Benares.	146*a*	10*th ditto* ...	
	A. Shakespear, Esq., Commissioner of Benares.	100	*Ditto ditto* ...	*Giving a description of the murrain which broke out among the Commissariat cattle in March last, and detailing the measures adopted.*
	Colonel G. A. Fisher, Commanding at Benares.	133	23*rd March* 1869 ...	*Setting forth the orders issued by Colonel Fisher on the occasion of the outbreak of cattle disease among the Commissariat cattle.*
	Ditto ditto ...	152	10*th April* 1869 ...	*Reports upon the cessation of cattle disease among Government cattle in cantonments since preventive measures were adopted.*
	Ditto ditto ...	187	6*th May* 1869 ...	*In continuation of the above, makes certain remarks regarding the above outbreak.*
	C. Barrow, Esq., V. S. ...	...	23*rd March* 1869...	*Describes the symptoms and* post-mortem *appearances of cattle attacked with rinderpest during the late outbreak among the Government Commissariat cattle.*
	Ditto ditto ...	...	5*th May* 1869 ...	*In continuation of the above.*

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Benares—*continued.*	Captain H. W. D. Chester, Sub-Assistant Commissary General.	288	6th May 1869 ...	Forwards a report of cases of rinderpest among the Commissariat cattle at Benares in 1869, p. 347.
	A. Shakespear, Esq., Commissioner, Benares.	201	7th August 1869...	Forwarding the Proceedings of the Committee appointed to report upon the epizootics lately prevailing among cattle in the Benares District, p. 348.
	W. A. Forbes, Esq., C. B., Commissioner, Benares Division.	155	21st May 1870 ...	Forwarding correspondence connected with a disease which has lately shown itself in the Benares District, p. 362.
	Captain G. T. J. Graham, District Superintendent of Police, Benares.	426	13th April 1870 ...	Submits a report on cattle disease and cattle poisoning in the Benares District, p. 362.
	A. J. Lawrence, Esq., Magistrate of Benares.	48	3rd May 1870 ...	Forwarding the above to the Commissioner with remarks, p. 364.
	Ditto ditto ...	50	*9th May* 1870 ...	*Forwarding letter with the Commission's Form No.* 1 *filled in.*
	Villagers of Moredaha ...	...	30th May 1870 ...	Evidence taken by the Cattle Plague Commission in the District of Benares, p. 365.
	Doorga Persad Aheer ...	...	1st June 1870 ...	
Azimgurh.	*Collector of Azimgurh* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 216. *The Tehsildar of Mahool in Azimgurh reports that there has been a good deal of mortality among the cattle, but no contagious disease.*
	J. Sladen, Esq., Officiating Magistrate.	245	19th September 1870	Reports the prevalence of *chechuck* in several tehsils of the Azimgurh District during the years 1869 and 1870, p. 367.
Goruckpore.	*Collector of Goruckpore* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 215. *No cases of cattle disease reported from Goruckpore.*
	T. E. Elliot, Esq., Magistrate of Goruckpore.	201	*7th November* 1870	*Forwarding a report from Mr. Berril, District Superintendent of Police, Goruckpore, describing the most fatal cattle diseases of the district.*
	Stephen G. Read, Esq., Goruckpore.	*D. O.*	30*th ditto* ..	*Describing the epizootic diseases which have recently attacked cattle in the Goruckpore District.*

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Ghazeepore	*Collector of Ghazeepore* ...	...	23*rd July* 1868 ..	*Selections, Government of India, No. 69, p. 216. A few cases of cattle disease were reported from Pergunnah Zumaneah in the Ghazeepore District.*
	W. Oldham, Esq., Magistrate of Ghazeepore.	350	18th July 1870 ...	Reports an outbreak of cattle disease in several villages to the north-east of Ghazeepore, p. 367.
	Ditto ditto ...	412	13*th August* 1870...	*Forwarding correspondence regarding cattle poisoning.*
	H. Gardener, Esq., Inspector of Police.	...	6*th ditto* ...	*Reports the cessation of cattle disease in the Ghazeepore District after a heavy fall of rain.*
	Mr. J. Bourke ...	...	10th ditto ...	Describes the nature of the cattle disease in the Ghazeepore District, p. 367.
Mirzapore.	*Collector of Mirzapore* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 216. No disease reported from Mirzapore.*
	J. Simson, Esq., Officiating Collector of Mirzapore.	462	22*nd November* 1870	*Forwards Form No. 1 of the Cattle Plague Commission duly filled in for his district.*
Bustee.	*Collector of Bustee* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 215. States that* pet-bhagee, *a sort of cattle murrain, prevailed in the Bustee Tehsil in* 1868, *and describes symptoms.*
	P. Wigram, Esq., Officiating Magistrate.	126	31*st August* 1870...	*Reports that cattle disease is more or less prevalent in his district.*
	W. Cooke, Esq., Zemindar, Bustee.	*D. O.*	15*th November* 1870	*Submitting a memo. regarding the prevalent cattle diseases in the Bustee District.*

HISTORICAL SKETCH.

The history of cattle disease in the North-Western Provinces is considerably more meagre than in Lower Bengal, but they both possess this feature in common, that the source of interest in the subject was the same, namely, a communication from the Madras Government, similar to that which has been noticed at page 38, giving a description of the outbreak of murrain in the District of Kurnool of that Presidency, and enquiring whether anything of the same sort had been observed within the jurisdiction of the Government of the North-Western Provinces. This letter (No. 1934, dated 27th October 1863) was sent to the Sudder Board of Revenue on the 3rd of December, with a request that the Commissioner of Jhansie, in whose Division murrain had appeared in 1861-62, should be requested to furnish information on the subject, or "any other officer within whose jurisdiction distemper may have appeared." Dr. Pearson, Superintendent General of Vaccination, was addressed separately on the same subject. HISTORICAL SKETCH.

In reply to this communication, the Sudder Board of Revenue submitted (20th April 1864) papers regarding cattle disease in Dehra Doon, Jhansie, and Lullutpore, which will be noticed hereafter. The reference to Dr. Pearson appears to have been without result.

Early in the year 1868 (17th January), the Government of India, in the Home Department, addressed the several local Governments, calling for papers relating to cattle murrain, with a view to their publication in a volume of Selections. The documents above referred to were accordingly transmitted by the Secretary to the Government, North-Western Provinces (4th January 1868), and will be found at pages 200—204 of the "Selections from the Records of the Government of India, Home Department," No. LXIX.

In June of the same year the Commissioner of Allahabad submitted to his Government reports regarding cattle disease in the District of Banda, which were subsequently forwarded (14th July) to the Government of India, and will be found in the same volume at pages 205—207.

Meantime, reports had been received by the Home Department regarding cattle disease in the Hurdui District of the Province of Oudh in November 1867 (Selections, pages 194—199). Copies of these documents were forwarded to the Government of the North-Western Provinces on the 8th February 1868, with a view to ascertain whether a similar disease existed in these Provinces, and whether the abundance or otherwise of salt had any effect upon the health of cattle. This question was referred to the Board of Revenue, who issued a Circular, No. B, dated 27th March 1868, to all Collectors. This Circular elicited replies from all the Collectors of these Provinces, which were summarised by the Secretary on the 23rd July 1868, transmitted to the local Government on the 22nd July, and to the Supreme Government on the 13th August.

These replies, which are printed in the Selections (pages 208—216), contain for most districts the earliest extant records on the subject of the diseases of cattle in them, and will be frequently referred to in these sketches. This account of the development of information regarding cattle murrain in these Provinces has been written here once for all, and will be referred to as occasion requires.

As regards the districts of the Benares Division, the Collectors of Benares, Goruckpore, and Mirzapore report that no cattle disease had appeared in their districts. Statements of this sort are to be understood as referring to known or reported cattle disease; for the personal inquiries of the Commission in all the localities visited by them disclosed, in these as in the Lower Provinces, a traditional or unrecorded history of cattle diseases, stretching back beyond the recollection of the present generation. This was notably the case with the Benares District, where oral testimony revealed the existence of cattle plague in the years 1849, 1855, 1857, and 1865.

1868.

HISTORICAL SKETCH.

The Collector of Bustee describes a plague which he calls *petbhagee*, whose symptoms were "languor, refusal to eat, diarrhœa, bloody stools, a swollen appearance, and sometimes maggot-infested lips," and which prevailed in the Bustee Tehseel adjoining the Fyzabad District. This may have been rinderpest, but the number of cattle affected by it is said to have been small. In Bansee considerable cattle sickness prevailed in September and October 1869; eight different cattle diseases are said to be known in this district.

The Collector of Azimgurh also reports that a good deal of cattle mortality had occurred on the confines of the Fyzabad District. It is worthy of note here that, as will be more fully shown in Appendix 4, a system of cattle poisoning was discovered in the Fyzabad District in February 1869, and it is not improbable that this may have been in part the cause of the mortality noticed by the Bustee and Azimgurh Collectors.

The report from Ghazeepore is more precise. Cattle disease had occurred in Pergunnah Zumaneah, on the Shahabad side of the Ganges, which was investigated by a farrier from the Kyrantadhee Stud, and pronounced to be a contagious typhoid fever—no doubt rinderpest. In the year 1869 cattle disease became a subject of great attention in Benares. It appears from the Proceedings of the Home Department (Nos. 172 to 174 of 21st August) that cattle disease appeared both in the district and among the Commissariat herd in the early months of 1869. It appears from a letter of Mr. M. Brodhurst, the Collector of Benares, that up to the month of March "there had not been a rumour of the existence of any cattle disease in the district." In a report to the Sudder Board of Revenue (dated 4th March) Mr. Brodhurst states that:—

1869.

"A few months since there was some sickness and loss of cattle, but at present there does not seem to be any, except in two villages of the Benares Tehsil, where considerable loss is said to have been sustained amongst the cattle from a disease termed by the natives *checkuck* or *small-pox*. Reports were called for from the Tehsildars, and as a result of these a village-to-village inquiry instituted. From these inquiries it appeared that the disease had broken out in October 1868. The Tehsildars had some difficulty in eliciting information from the people, but they found the symptoms of the disease to be,—hair standing on end, ears drooping, a sticky saliva from the mouth, distention of the stomach, frequent purging—first of watery, then of bloody discharges—and death in from one to nine days after attack."

The remedies used by the people are specified: ghee, the rind of *kohlha*—a kind of gourd,—fomentation of the face with decoction of neem, and poojahs. The latter had been performed by chamars for money received. The Tehsildars were inclined to believe that many of the deaths were attributable to poisoning. Mr. Brodhurst goes on to say that on the 9th May he had seen cattle belonging to Rajah Sir Deonarain Singh suffering, in the neighbourhood of Benares, from symptoms similar to those above described. This, he remarks, could not be owing to poisoning, because the chamars were not allowed to take the hides. The Rajah had lost 13 cattle in Benares, and the same disease had broken out among his cattle on an estate near Syudpore, in the District of Ghazeepore. The Rajah's cattle were of superior breed and lived under good sanitary conditions, and succumbed to the disease, while the weaker and comparatively worthless were not attacked, or if attacked, recovered. Cases of cattle poisoning had been brought to light in the district, and 27 persons had been punished for the crime within 6 months; arsenic being the poison used. In the adjoining District of Jounpore the mortality, alleged chiefly from poisoning, had been very great during the preceding few months. The result of the village inquiries is shown in the statement at page 358, and the Collector surmises that the deaths had not probably exceeded one per cent. of existing stock. Proclamations had been issued enjoining segregation, and forbidding movement of infected cattle. While these inquiries were being prosecuted regarding the cattle of the district, disease had broken out among the Commissariat slaughter cattle in the military cantonments. The disease broke out on the 13th of March 1869 amongst a batch of cattle which had been purchased at the Kat Berhampore Fair, in the Shahabad District, on the 10th of February, and marched to Benares, arriving there on the 18th, 13 days before the disease broke out.

Four cattle died on the 13th March: these must have sickened some days before. The progress of the disease is shown in the statement prepared by Captain Chester, the Commissariat Officer, at page 347. The matter was reported to the Officer Commanding the Station on the 21st, and a special Committee was at once appointed "for the purpose of examining the cattle and taking such steps as might be necessary to check the spread of the disease." Veterinary Surgeon C. Barrow, of the 19th Hussars, carefully examined the cattle, reported that they were suffering from rinderpest, and recommended separation, the slaughter of diseased animals, burial, quarantine, and continued inspection. His letter is printed in full at page 360. Accordingly, 17 animals were slaughtered, the skins were destroyed, the carcasses buried, and the sheds thoroughly disinfected. The disease died out by the 27th. The slaughter cattle were carefully inspected by a Veterinary Surgeon, and the meat by a Medical Officer, and the strictest separation of sick and healthy enforced. The result was that in a stock of 230 head, 93 were attacked, 35 died, and 18 were destroyed. A second batch of cattle was bought at the same fair on the 10th of April, and marched to Benares, where they arrived on the 18th of April. They were inspected and found apparently healthy, and housed with the remaining cattle; disease, however, broke out among them on the 22nd, four days after the introduction of the new cattle. The progress of this new outbreak is shown in Captain Chester's statement at page 348, and the nature of the disease pointed out by Veterinary Surgeon C. Barrow in a letter dated 5th May 1869 (page 361). The disease died out on the 7th May after 77 had been attacked in a stock of 340, and 37 had died; 18 sheep were also attacked with similar symptoms, and 9 of these died. The destruction of diseased animals was not resorted to on this occasion,—separation, cleanliness, and medical treatment (bleeding, purgatives and tonics) being the means employed to combat the plague. HISTORICAL SKETCH.

Attention was now directed to ascertain whether disease had existed at the fair or along the road by which the cattle had marched. It was found that a similar disease had broken out among 130 cattle purchased at the same fair and marched to Dinapore: 10 died out of 30 attacked. The Collector of Ghazeepore reported that a "contagious fever" had prevailed among cattle in February and April at two of the halting places, and it was subsequently ascertained from the Assistant Magistrate of Buxar that *seetlah* had broken out at the April fair and in some of the surrounding villages. All the correspondence summarised above was sent up to the Government of India, and the matter attracted the notice of His Excellency the Viceroy, who ordered an inquiry. A Committee was accordingly convened, consisting of Colonel Turner, Mr. Brodhurst, Collector of Benares, Dr. R. Cockburn, Civil Surgeon, Captain H. D. E. Chester, Deputy Assistant Commissary General, and Veterinary Surgeon E. Stanley, 5th Lancers. This Committee, after a careful investigation, came to the conclusion that the disease was rinderpest, and was endemic. They could not recommend "stamping out," but urged segregation and legislative action to that end. The Proceedings, which have not been hitherto published, are given in full in this Appendix, because of their interest and as an example of the benefit which may be expected to arise from convening station committees on such occasions, in the way of eliciting the truth and suggesting measures appropriate to the country and peculiarities of the place.

While the evidence regarding the prevalence of disease in the Benares District in 1869 is so strong and clear, the information from other districts of this Division is scanty. In Jounpore there was "very great loss of cattle" during the year. This was attributed partly to disease and partly to poisoning. There can be no doubt that both causes were in operation. The deaths were estimated by Mr. Daniell, the Magistrate of the District, at 12,000 head, and it is very difficult to say how many were due to one or other cause. The impression gained by the Commission during their visit to this district was, that disease was responsible for the majority of deaths, and that here, as in other parts, poisoning was practised under cover of the disease, and that when

HISTORICAL SKETCH. a few cases of the latter were discovered, the people were prone to attribute all their losses to a cause which satisfactorily accounted for some.

1870. On the 25th of January 1870 the Collector of Benares reported that cattle disease no longer existed in the district. It was found, however, in April to be extensively prevailing, and in a return furnished by the Police, dated the 1st of May, 1,139 deaths are reported out of 1,388 cases—82 per cent.—probably an exaggerated statement. A careful local investigation was made by the District Superintendent of Police. Cases of poisoning were discovered, but the investigations satisfied the Collector that these were few in number, and even after stringent orders for burial were passed and enforced, deaths continued to occur as before. The reports of the District Officers are full of interest and are given in detail. Veterinary Surgeon Lemon, Royal Horse Artillery, accompanied the District Superintendent of Police into the district and studied the disease, giving directions for treatment. He found the disease so much milder in type than he had known it in England, that he at first doubted its identity with rinderpest. At the request of His Honor the Lieutenant Governor, this district was visited by the Commission on the 30th of May. The disease was found to be prevailing in the immediate vicinity of the city of Benares, and cases were examined: the *post-mortem* examinations made, and evidence taken, convinced them that it was the same form of disease which they had previously met with, namely, rinderpest, an opinion in which Mr. Lemon, after re-considering all the evidence upon the subject, concurred. The disease in this district appears to have died out about this time, and no subsequent reports were received. The District of Jounpore was visited by the Commission early in June, for the purpose of inquiring into the subject of cattle poisoning. Efforts were made to discover the existence of disease, but without success. Cattle disease prevailed in the Ghazeepore District in July and August, but not in a severe degree, and seems to have been put a stop to by a heavy fall of rain.

The Magistrate of Azimgurh reports the prevalence of *chechuck* in some tehsils of the district in April, May, and June. The information given is meagre.

In the District of Bustee cattle disease is well known, and both rinderpest (*bhawanee*, &c.) and foot and mouth disease are said to exist. The latter prevailed in August towards the north of the district. Hoven appears to be a common disease in the district, caused by improper feeding, and called *petbhaghee*, &c.

In Mirzapore disease prevailed extensively from March to November. The disease prevailed in 125 villages of Pergunnahs Kuntil, Chunar, Robertsgunge, and Burhur, the greater number of the villages being included in the latter. The diseases are called *seetla*, *rungwa*, and *batass*. In a stock of 347,754, 33,250 cattle are said to have been attacked—9·56 per cent. of stock; 10,705 to have died—3·07 per cent. of stock, and 32·19 per cent. of attacked; and 22,545 to have recovered. The diseases are pronounced infectious. *Seetlah* appears to indicate rinderpest, and as the symptoms are not clearly distinguished, it is difficult to know what the other two names represent.

In the District of Goruckpore no official report of prevailing disease was received; but from a private letter received by a member of the Commission, it appears that both foot and mouth disease (*kang*) and rinderpest (*chechuck*) are well known, and prevail yearly. Other diseases are mentioned, which it is impossible, from the imperfect descriptions given, to identify, but hoven (*bhaghee*) is among them.

DISTRICT OF BENARES.

BENARES.

From the Executive Commissariat Officer, Benares, to the President, Special Committee for prevention of spread of Cattle Disease at Benares,—No. 288, *dated the 6th May* 1869. Captain H. W. D. Chester.

In forwarding statement showing the number of cattle attacked up to date since the second outbreak of cattle disease amongst the Government slaughter cattle at this station, I have the honor to inform you that the second outbreak commenced on the 22nd April 1869 amongst a new batch of bullocks purchased during that month at the Kat Berhampore Fair, about 90 miles from this, in the Shahabad District. They were marched to this *viâ* Buxar and Ghazeepore.

As the first outbreak first appeared among a batch of bullocks purchased at the same fair in February, I gave orders that they were not to be brought into cantonment until I had inspected them.

The cattle arrived at the Rajghaut on the 18th April, and the following morning I inspected them with the station butcher. As every animal appeared healthy and in good condition, I ordered them up to the cattle-shed in cantonment.

Directly the first outbreak had been suppressed, I had the floors of all the sheds dug up, fresh earth laid down, the feeding troughs whitewashed, and the floors, pots, &c., sprinkled with lime-water.

I have pursued the same treatment, *viz.*, bleeding from the jugular vein, administering purgatives and tonics. It will be seen by the statement that out of 77 attacked, 37 have died, and I imagine that about eight more that are still sick will not recover; the percentage of deaths will then be about half of the number attacked, whereas during the first outbreak the percentage of deaths was about two-thirds of the number attacked.

Report of cases of Rinderpest in the Commissariat Department at Benares.

Number of animals at time of outbreak.	Number of animals attacked and suspicious.	Number of animals convalescents.	Number of animals died.	Number of animals killed.		Number of animals healthy.	Date.
				Rations.	Destroyed.		
							March 1869.
296	36	...	4	7	...	253	13th, Saturday.
285	20	6	8	2	...	249	14th, Sunday.
275	21	8	6	4	...	236	15th, Monday.
265	15	10	6	4	...	230	16th, Tuesday.
255	7	14	4	5	...	225	17th, Wednesday.
246	6	14	1	4	...	221	18th, Thursday.
241	22	14	2	4	...	199	19th, Friday.
235	27	14	1	4	...	189	20th, Saturday.
230	8	16	3	2	17	184	21st, Sunday.
208	10	16	...	4	...	178	22nd, Monday.
204	16	16	...	5	1	166	23rd, Tuesday.
198	4	33	...	4	...	157	24th, Wednesday.
194	4	37	...	4	...	149	25th, Thursday.
190	...	41	...	4	...	145	26th, Friday.
186	...	1	...	4	...	181	27th, Saturday.
182	...	...	...	...	...	...	
...	196	...	35	...	18	...	

Number of animals at time of outbreak.		Number of animals attacked and suspicious.		Number of animals convalescents.		Number of animals died.		Number of animals killed.				Number of animals healthy.		Date.
								Rations.		Destroyed.				
Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	
384	...		...	...	...	...	...	2	...	...	...	377	...	22nd Apl. 1869.
382	...	24	...	...	...	...	...	5	...	...	...	353	...	23rd ,,
377	...	...	...	...	...	3	...	4	...	...	...	349	...	24th ,,
370	...	...	...	...	...	4	..	2	...	...	...	347	...	25th ,,
364	...	...	...	...	...	1	...	4	...	...	...	343	...	26th ,,
359	...	...	...	...	...	3	...	4	...	...	...	339	...	27th ,,
352	...	...	...	...	...	2	...	4	...	...	...	335	...	28th ,,
346	...	...	...	...	...	1	...	4	...	...	...	331	...	29th ,,
341	...	...	...	...	...	1	...	4	...	...	...	327	...	30th ,,
336	165	19	13	...	...	1	...	4	1	...	...	304	151	1st May 1869.
331	164	...	...	...	...	2	2	2	21	...	...	302	130	2nd ,,
327	141	...	3	...	...	3	3	4	1	...	...	298	126	3rd ,,
320	137	29	1	...	...	5	3	4	1	...	...	265	124	4th ,,
311	133	...	1	...	...	5	...	4	1	...	...	261	122	5th ,,
302	132	...	...	...	...	5	1	4	1	...	...	257	121	6th ,,
293	130	...	..	...	...	1	...	4	...	...	...	253	121	7th ,,
288	130	...	...	...	...	...	...	...	...	...	...	...	...	8th ,,
...	...	77	18	...	...	37	9	...	...	...	...	...	...	

N. B.—The third column cannot be filled up, as the return was not kept in this form during second outbreak.

BENARES.
R. Simson, Esq.

From R. SIMSON, Esq., *Secretary to the Government of the North-Western Provinces, to the Secretary to the Government of India, Simla,*—(*No. 747A, dated Nynee Tal, the 8th September* 1869).

With reference to the endorsement from your office, No. 2856, dated 21st June last, forwarding correspondence, and requesting that a Committee be nominated to report on the outbreak of murrain amongst the cattle and sheep in the Benares District, I am desired to forward, for submission to His Excellency the Viceroy and Governor General in Council, a copy of a letter* from the Commissioner of Benares, with copies of enclosed papers, being a report of the Proceedings of the Committee assembled for the above purpose.

* No. 201, dated 7th August 1869.

2. The original correspondence received with the endorsement under reference is herewith returned.

A. Shakespear, Esq.

From A. SHAKESPEAR, Esq., *Commissioner of the Benares Division, to the Secretary to the Government of the North-Western Provinces,*—(*No.* 201, *dated the 7th August* 1869).

With reference to the order of Government, No. 193A, dated the 6th ultimo, I have the honor to submit herewith, in original, the Proceedings of the Committee assembled at this station for the purpose of inquiring into the cause and nature of the cattle plague which a short time ago prevailed in this district, and to return the original enclosures which accompanied your communication under acknowledgment.

Proceedings of Committee.

Proceedings of a Committee assembled at Benares on Saturday, the 17th of July 1869, *under instructions received from His Honor the Lieutenant-Governor of the North-Western Provinces to inquire into and report upon the nature and course of an epidemic which has lately prevailed amongst the Government and other cattle in Benares, and the District, and of the proper mode of treating such outbursts.*

The Committee is composed as follows:—

COLONEL A. TURNER, *Bengal Staff Corps.*
M. BRODHURST, ESQUIRE, *Collector and Magistrate, Benares.*
SURGEON-MAJOR COCKBURN, *Civil Surgeon, Benares.*
CAPTAIN CHESTER, *Deputy Assistant Commissary General, Benares.*
VETERINARY SURGEON E. STANLEY, 19*th Hussars.*

The Committee assembled at 10 A. M. at the Library, Civil Lines, Benares: all present.

Letter No. 170, from A. Shakespear, Esquire, Commissioner of the Benares Division, dated Benares, 10th July 1869, to Colonel Fisher, Commanding at Benares, is read and appended, marked 1.

Appendix 1.

Letter, in copy, No. 193A of 1869, Revenue Department, from R. Simson, Esquire, Secretary to Government, North-Western Provinces, to A. Shakespear, Esquire, Commissioner, Benares Division, dated Nynee Tal, 6th July 1869, giving copies of official memorandum, Military Department, No. 165, dated Simla, 8th June 1869, signed H. W. Norman, Major-General, and a copy of a memorandum by the Right Honorable the Governor General of India in Council, Military Department, dated Simla, 2nd June 1869, and memorandum No. 2856, Home Department, Public, Simla, 21st June 1869, signed J. Geoghegan, Under Secretary to Government of India, is read and appended, marked 2.

Appendix 2.

The enclosures noted in Major-General Norman's official memorandum No. 165 of 8th June 1869 having been read—

1st *witness*—Captain Chester

CAPTAIN CHESTER, a member of the Committee, is questioned, and in reply gives the following answers:—

The epidemic first appeared in the Commissariat cattle-yard here amongst a batch purchased at Kat Berhampore by my agent and marched up by some of the establishment. They left Berhampore on the 10th of February last and marched up, halting daily at Bajpore, Buxar, Kutwar Ghat, Mohamadabad, Ghazeepore, Nundgunge, Syudpore, Chowbepore, and into Benares on the 18th. The disease did not appear in this batch till the 13th of March. The second batch was purchased under the same circumstances, and marched up by the same stages. They left Berhampore on the 11th of April and arrived at Benares on the 19th of April. The disease appeared in this batch on the 21th of April. I had never seen any

similar disease before; but as I thought the treatment I adopted the best, I used it. I had not then heard of the existence of this disease elsewhere. I had purchased other cattle elsewhere about that time. They caught this disease afterwards.

Captain Chester wishes to make a few remarks.

Remarks by Captain Chester.—The Officer Commanding at Benares has stated in his letter No. 152 of the 10th of April, that the Committee of Inquiry at Benares ordered all the skins of diseased cattle to be destroyed, but I had ordered this to be done from the commencement of the outbreak almost.

2nd witness—the station butcher, Benares.

No. 1163, W. PERKS, 2nd Battalion, Her Majesty's 60th Rifles, is called before the Committee, and in reply to questions states as follows:—

I was a butcher by trade before I enlisted. I am the station butcher here.

I saw two cases at Home in 1865 of a disease similar to that which lately broke out in the slaughter cattle here. I was one of the men selected to go and assist a farmer making up his hay at Dover, and I saw two cows sick. I asked what was the matter with them, and they said it was cattle plague. I do not know what became of them. The symptoms were a running at the nose and eyes, and purging. I do not know if the cattle plague was about Dover then. I saw the dead cattle opened at Benares. I opened them myself in the presence of Mr. Barrow and Captain Chester. The peculiarities I observed about them were, the gall enlarged, the stomach very much inflamed, spots all over the stomach—red spots. I opened two dead sheep by order of Captain Chester, but theirs was not the same disease as the horned cattle had; this was in the second outbreak; their livers were quite rotten. I did not open any of the sheep in the first outbreak.

The witness withdraws.

3rd witness—the Commissariat Meat Agent.

ABDOOL GUNNY, Commissariat Meat Agent, is called before the Committee, and in reply to questions states as follows:—

I purchased a batch of cattle for the Commissariat in February last at Kat Berhampore Fair. All the cattle I purchased arrived here safely. The people who brought the cattle up here made no report to me of any sickness existing amongst other cattle on the road. The second batch was purchased by me and marched up under precisely the same circumstances as the first. I was in the first fair three days, and in the second fair two days, and I saw no sickness there and heard of none. The Dinapore Commissariat Agent was there. I have heard from the cattle dealers that sickness of the same kind as was at Benares did break out amongst those he purchased there. I have been twenty years in this work, and I have never before seen a similar disease to this one at Benares. Since February last, I have heard from cartmen coming into Benares that a disease has existed in the district, of which the symptoms were similar to those of the Commissariat cattle here. I know of no name for this disease, and neither I nor those who told me of its being in the district have ever heard of such a disease before. I do not know of any such cases of disease existing in or near Benares now. There have been two outbreaks of disease amongst the Government sheep here. I cannot say if it was the same disease as that amongst the horned cattle, but they were much purged and had a running at the nose and mouth.

The witness withdraws.

4th witness—an Agent of the Maharajah of Benares.

KIDDERNATH PUNDIT, an Agent of the Maharajah of Benares, is called before the Committee, and in reply to questions says as follows:—

The Maharajah has from 250 to 300 villages in this district. I have heard of the existence of cattle disease in many of these villages ever since October last. Amongst the draught cattle of the Maharajah at Ramnuggur he lost eighty, and one hundred and twenty-five milch cows in the other villages. The disease is called *seetlah*, or *chechuck (i. e., small-pox)*. The symptoms are,—first hot breath from the nostrils, extreme heat inside of the mouth if the hand is inserted; if the mouth is opened, it looks as if it had been scalded; then a thick, slimy discharge from the mouth and nose, and from the eyes a watery one, and at the same time extreme heat of body; sometimes dark spots appeared on different parts of the skin of the body; occasionally blood flowed from the nose and anus in the latter stages of the disease; even after these symptoms the animal sometimes recovered, and, in fact, about fifty per cent. recovered of those attacked. Of the attacked, those which were freely purged, excrement being freely mixed with blood, recovered; those which passed merely blood died. We treated them with a mixture of neem leaves, barley meal, curd and whey, with, we think, a beneficial result. I have seen similar disease to this ten or fifteen times before, and the last time was three years ago; and in that year forty-three draught cattle of the Maharajah died of the same disease at Ramnuggur, and it prevailed at the same time in the other villages, but the disease was not so virulent as this last epidemic. We believe the disease to be contagious, and it is the custom to keep the cattle of a village in which the disease exists separate from the healthy villages. I know nothing about this disease amongst sheep.

The witness withdraws.

BENARES.

Proceedings of Committee.

HURPERSHAD PANDY, a Darogah of the Cattle Department of Rajah Sir Deo Narain Singh, is called before the Committee, and in reply to questions states as follows:—

5th witness—a Cattle Darogah of Rajah Sir Deo Narain Singh.

Sixteen of the Rajah's horned cattle died at Benares and fifteen at Syudpore in the Ghazeepore District, after the following symptoms. [The symptoms now described by this witness are precisely the same as those by the last witness.] The cattle mostly died about from the third to the eighth day. About six or eight years ago a similar disease broke out amongst the Rajah's cattle, only of not so virulent a type. I have been eighteen or twenty years in the Rajah's service. I have heard that a similar disease has occurred two or four times before in the district, and many cattle have died of it, but I have not seen it myself in the district. We treated the disease with spice, neem leaves, and milk, but with no benefit at all. Out of the cattle attacked at Benares, twenty-one in number, sixteen died, and of the nineteen attacked at Syudpore, fifteen died, where the Rajah's cattle which had been attacked were removed to for change of air. There were two cows and two calves tethered within a few yards; they were attacked twenty or thirty days after the Rajah's cattle were first sent to that place, and one cow and one calf died.

The witness withdraws.

The following correspondence, which has been obtained from the Commissioner of Benares, and in which are all the letters written and received by him subsequently to his No. 98 of 6th May 1869, and gives all the information he has on the subject of the Committee's inquiry, is now read; the Committee first noting that Mr. Shakespear's No. 98 has already been read with Major-General Norman's official memorandum No. 165 of 8th June, being part of the printed paper, No. 1118 of 22nd May 1869, from the Secretary to Government, North-Western Provinces:—

LIST.

No. 85 of 7th May, from the Commissioner of Benares, to the Collector of Benares, requesting a full report regarding the appearance of an epidemic cattle disease in the Benares cantonments and surrounding district.

No. 100 of 10th May, from the Commissioner of Benares, to Secretary to Government, North-Western Provinces, in continuation of No. 98 of 6th May.

No. 102 of 12th May, from the Commissioner of Benares, to Secretary to Government, North-Western Provinces, forwarding, in original, a report from the Collector of Benares regarding the existence of cattle disease in his district. (*Note by the Committee.*—No copy of the Collector's report accompanied this.)

No. 110 of 7th May, from the Commissioner of Benares, to the Officer Commanding at Benares, requesting to be furnished with a full report of the appearance of an epidemic cattle disease in the cantonments and surrounding district.

No. 116 of 12th May, from the Commissioner of Benares, to the Commissioner of Patna, reporting that Government slaughter cattle had been purchased at the fair at Kat Berhampore in February and April last, and were marched up *viâ* Buxar and Ghazeepore, and that, after arrival at Benares, a disease, said to be similar to rinderpest, had broken out amongst them; and asking for information as to the existence of similar disease amongst the cattle at Kat Berhampore Fair and the neighbourhood, or at Bajpore or Buxar, through which the cattle marched to Benares, and as to any similar disease having appeared at Dinapore amongst cattle purchased at the same fairs.

No. 131, from the Commissioner of Benares, to the Collector of Ghazeepore, dated 12th May, calling for information whether any disease similar to rinderpest existed in February and April last at the stages named in his district, those where the Commissariat cattle halted on the march up.

No. A. of 28th May 1869, from the Collector of Ghazeepore, to the Commissioner of Benares, reporting that a contagious fever of the kind indicated existed in February and April last at Mohamadabad and Nundgunge, and that the cattle at Kotwah, Ghazeepore and Syudpore were free from it.

No. 206, from Personal Assistant to the Commissioner of Patna, dated 10th June 1869, to the Commissioner of Benares, forwarding copy of a letter from the Cantonment Magistrate of Dinapore, to the Magistrate of Patna, dated 28th May, with a copy of No. 301 of 27th May, from the Deputy Assistant Commissary General, Dinapore, stating that 130 head of cattle had been purchased at Kat Berhampore in February last, and 105 in April; that during the former month no deaths occurred, and during the latter only two, but that ten occurred during March amongst cattle purchased at Kat Berhampore from a disease showing running at the nostrils, heated sides, indicating the existence of intense fever, and violent purging; and that at first the disease was treated with buttermilk mixed with bael fruit, which

Proceedings of Committee.

proved partially successful; but that as some ten out of thirty attacked died, the few which were subsequently attacked were treated with carbolic acid, and of these none died.

Treatment.—Solution of carbolic acid (Calvert's No. 5), one table-spoonful to a pint bottle of water, of which a dessert-spoonful mixed with a large wine-glassful of water was given internally, and a little of the solution applied to the nostrils with a piece of cotton.

No. 206 of 10th June, from Assistant Commissioner of Patna, to the Commissioner of Benares, with reference to 116 of 12th instant, intimating that a reference on the subject has also been made to the Magistrate of Shahabad, whose report will be forwarded when received.

No. 147 of 15th June, from the Commissioner of Benares, to the Secretary to Government, North-Western Provinces, forwarding the report of the Dinapore Commissariat Officer regarding the existence and treatment of the disease amongst the cattle he purchased at Kat Berhampore, also the Collector of Ghazeepore's report; and adding that no fresh cases had occurred amongst the Government cattle at Benares since the 8th ultimo.

No. 227 of 26th June, from the Personal Assistant to the Commissioner of Patna, to the Commissioner of Benares, forwarding copy of a letter, No. 107 of 5th instant, from the Assistant Magistrate of Buxar, on the subject of the cattle disease, and No. 162 of 1st instant, forwarding the above letter No. 107 in original, copy as received, to the Secretary to Government, North-Western Provinces. (No copy of No. 107 supplied to the Committee.)

The Committee now adjourns till Monday, the 19th instant.

Monday, 19th July 1869.

Second day's meeting.

The Committee re-assembles this day, pursuant to adjournment: all present.

ALLY HOSSEIN, Tehsildar of Benares, is called before the Committee, and in reply to questions states as follows:— *6th witness*—Tehsildar of Benares.

I first heard of the existence of cattle disease in this district in the commencement of March last, when the Putwarries were summoned before the Collector to report as to the state of the crops. From that time inquiries were made from village to village in my tehsilee, and those inquiries have now been made in every village. The total number of deaths amongst the horned cattle in my tehsilee from the outbreak up to the end of June are 2,347; this is, on a rough estimate, a loss of about one per cent. on the total number of cattle. In my opinion, three-fourths of the loss is owing to poison and one-fourth to disease. My reason for this opinion is, that the cattle in best condition, young and with good hides, are the ones that died; also, that where the zemindars are men who act for themselves, they send for the chamars, frighten them, and the disease stops; another reason is, that in one village it appeared that the chamars had taken money from the villagers for poojahs, and then the disease stopped. I went to fifteen or sixteen villages; there had been sickness there, but at the time I went there was none. When I first went to the villages I found that the ryots would tell me nothing about the disease, but when I explained to them that no case would be brought before the Courts, they at last told me regarding the deaths that had taken place amongst their cattle. Some of them said that the cattle had died of disease, and others expressed doubts that they might have died from poison; but they said they were unable to prefer complaints in the Magistrates' Courts, as they had no proofs. I heard that arsenic was the poison used. I know of no cattle being ill at the present time nearer here than twelve miles, and I am not certain that there are any within that distance; but I am making inquiries. The people generally would most strongly object to their cattle being killed, even if compensation for them was given: the Hindoos would part with their own lives first. Some of the Mahomedans would not make so much objection, provided they were compensated. The zemindar who threatened the chamars was Baboo Lall Bahadoor Singh; he pays a revenue to Government of Rs. 12,000 in this tehsilee; he has several villages, and I do not know in which village he threatened the chamars, but I heard of it when making inquiries in other villages. I have been in this district nine years, and I have heard of this disease being off and on for the past three years.

The witness withdraws.

GOORUN, a cowherd, resident of Secrole, Benares, is called before the Committee, and in reply to questions states as follows:— *7th witness*—a cowherd of Secrole.

I have seventeen cows. I have heard of this disease existing for about five months, but I heard of its being at Jounpore for about a year, and I did hear of its being in one village in this district, *viz.*, Sersole, in the Chundowla Tehsilee, about a year ago. Within the last twenty years I have seen this disease, small-pox, four times,—firstly, about twenty years ago, when I had forty head of cattle, and eighteen died in eight days; about fifty died in my village at that time, and it prevailed elsewhere; the next outbreak took place about fourteen years ago, when a large number died; then when the mutiny was going on, Mr. Horne, who was afterwards Judge here, had a great number of cattle collected here for Government purposes, and a great number of

BENARES.

Proceedings of Committee.

them died—the disease also prevailed in the district; then about four years ago a great many sheep died—nearly all the sheep in the district died; there was no disease of the horned cattle at that time; and lastly this attack. Ramdehull, cowherd of Sewpore, about a mile and a half from here, lost seventeen out of about thirty; and a man named Muheesh, a cowherd who lives close by here, lost six out of ten between one and two months ago; Kasee, in the Rada Bazaar, about a mile from here, lost ten out of sixteen about the same time. I also heard that some of the Coorg Rajah's cattle were sick. I hear the disease still exists. I hear the disease exists now at a village called Chookepoora, near Buxara, where there are some buffaloes ill. All the above alluded to disease was small-pox. Besides this disease, there has also been, to my recollection, foot and mouth disease, but cattle do not die from that much; in fact seldom. I do not know of any disease existing now, excepting at the village I mentioned, and of that only from hearsay. [The symptoms now described are identical with those given by the 4th and 5th witnesses, and the treatment is much the same.]

The cattle did not benefit from the treatment. The present attack, so far as I know, has not extended to sheep. I have not the least reason to think that any of the cattle have died from poison, and I have not heard of such here; but I have heard that in the district chamars do poison cattle occasionally. I have seen within the last five months from two hundred and fifty to three hundred cattle sick, and about half died. I saw them both sick and dead: they were of all ages and descriptions.

8th witness—a cowherd.

MUHESH, cowherd, residing close at hand, is called before the Committee, and in reply to questions states:—

I lost six head of cattle out of nine about two months ago—three cows and three calves. They died in from one to fifteen days; the cows first, and then the calves. The disease was small-pox. I have known this disease five or six times; it comes and goes. I am thirty years old. I do not know of any cattle being sick now. It ceased when the rain commenced and the weather got cool.

The witnesses withdraw.

The Committee now adjourns pending the receipt of information from Jounpore for which it has applied, and to obtain, if possible, a case of the disease, &c., &c., &c.

Third day's meeting.

Wednesday, 4th August 1869.

Appendices 3 and 4.

The Committee re-assembles this day: all present. Two letters to the Collector and Magistrate of Jounpore, to which no answers have as yet been received, are read and appended, marked 3 and 4.

Appendix 10.

Reply received after the adjournment of the Committee, Appendix 10.

Appendix 5.

A report by Mr. Brodhurst, a member of the Committee, is read and appended, marked 5.

Appendix 6.

A report by Mr. Stanley, a member of the Committee, is read and appended, marked 6.

Appendix 7.

Copies of Veterinary Surgeon Barrow's reports on the cattle disease, as it existed amongst the Government cattle at Benares during the months of March and May 1869, are appended,

Appendix 8.

marked respectively 7 and 8.

Appendix 9.

A summary return showing the number of Commissariat cattle attacked, destroyed, died, recovered, and the mode in which the recovered cattle were disposed of during the above-mentioned outbreaks, is read and appended, and marked 9.

The Committee notes that it has attentively considered the following Reports:—

Report in the Supplement to the *Calcutta Gazette* of 10th February 1864.

Report by Dr. C. Palmer, dated 7th October 1865.

Report of Dr. Kenneth McLeod, No. 655, dated 13th November 1867.

Third Report of the Royal Commission on Rinderpest in England, 1866.

Report.

The Committee makes its Report as follows:—

1*st.*—Nature of disease.

1*st.*—On the nature of the disease, as it has lately prevailed amongst the Government and other cattle in Benares and the district.

The disease appears to be that which has long been known, not only in this district, but also in many other parts of India, as *matah, chechuck, seetlah, gootee, puschima,* or small-pox. In many respects it much resembles the rinderpest, as was reported by the Royal Commission in England; but it does not appear to spread so rapidly by contagion or infection; the fatality amongst those attacked is sometimes as great as in England, but the Committee cannot decide whether this result is due to want of care and medical treatment, or to the virulence of the disease. With reference to the suspicion of deaths from poison which has arisen, the Committee is of opinion that such cases in the Benares District are quite exceptional.

BENARES.

Proceedings of Committee.

2*nd*.—Course of disease.

2*nd*.—On the course of the disease.

The Committee is of opinion that the course of the disease cannot be traced, as it has existed on and off for many years; it is clear that it was not introduced recently by the Government cattle.

3*rd*.—Mode of dealing with such outbursts.

3*rd*.—On the mode of dealing with such outbursts, the Committee is of opinion that the "stamping out" process is so opposed to the religious feelings of the majority of the population of India as to be quite inapplicable to the country; and further, that when the disease exists in several hundred villages of the same district at the same time, this process, if attempted, would require such an amount of professional superintendence as could not possibly be afforded; moreover, the Committee entertains no suspicion of the disease having been imported or brought into the country, but considers it endemic or self-generating, for which "stamping out" is useless. The Committee is of opinion that segregation is the proper mode of meeting these outbursts, but without special legislation the difficulties of carrying this out appear insuperable.

The Committee adjourns *sine die*.

A reply from the Officiating Joint Magistrate of Jounpore, No. 372 of 2nd August 1869, to the Committee's letter of 9th July 1869, having been received after the final adjournment of the Committee, and seen by all the members, is appended, marked 10. Appendix 10.

A. TURNER, *Colonel*,
Member.

APPENDIX 1.

From A. SHAKESPEAR, Esq., *Commissioner, 5th or Benares Division, to the Officer Commanding at Benares,—(No.* 170, *dated the* 10*th July* 1869). A. Shakespear, Esq.

I have the honor to forward copy of a letter from the Secretary to the Government, North-Western Provinces, with its enclosures,* in original, connected with the disease that has lately prevailed amongst the cattle at Benares.

* To be returned.

2. You will observe that the Magistrate and Civil Surgeon of Benares are named by the Lieutenant-Governor of the North-Western Provinces, and you are requested to nominate three other members to complete the Committee, whose duty it will be to carry out the instructions conveyed by the Government of India for an immediate inquiry being made into the nature and course of the epidemic and of the proper mode of treating such outbursts.

3. Intimation will be given to the Magistrate and Civil Surgeon, and you will be good enough to communicate to them the time and place at which the Committee will meet.

APPENDIX 2.

From R. SIMSON, Esq., *Secretary to the Government of the North-Western Provinces, to* A. SHAKESPEAR, Esq., *Commissioner of the Benares Division,—(No.* 193*A, dated Nynee Tal, the* 6*th July* 1869). R. Simson, Esq.

I am directed to forward, in original, the papers noted in the margin, having reference to the recent outbreak of disease among the cattle at Benares.

From Home Department, Government of India, to Government, North-Western Provinces, No. 2856, dated the 21st ultimo, and enclosures.

2. The Lieutenant-Governor desires that a Committee of five members may be convened for the purpose of making the required investigation. Of the five members, the Magistrate and Civil Surgeon are nominated to represent this Government, and the rest will be appointed by the Military Authorities.

3. You will submit the papers to the Officer Commanding at Benares, and say that, should he agree to nominate three members to the Committee, it would, in the opinion of this Government, be advisable that a Military Officer, a Commissariat Officer, and a Veterinary Officer should be on the Committee.

4. The favor of an early report is requested, together with the return of the original correspondence.

BENARES. General Norman.

Office Memorandum by MAJOR GENERAL H. W. NORMAN, *Secretary to the Government of India, Military Department,—No.* 165, *dated Simla, the 8th June* 1869.

The undersigned has the honor to forward, for disposal in the Home Department, the accompanying correspondence* regarding an outbreak of so-called rinderpest, or a murrain, amongst the cattle and sheep in the Benares District.

* From Adjutant General, No. 312E, dated 1st April 1869.
To the Officer Commanding at Benares, No. 15, dated 7th April 1869.
Telegram from Ditto, No. 57, dated 8th April 1869.
From Adjutant General, No 567E, dated 17th April 1869. One enclosure.
To the North-Western Provinces Government, No. 155, dated 21st April 1869.
From Ditto, No. 1118, dated 22nd May 1869.
From Adjutant General, No. 865E, dated 25th May 1869. One enclosure.
Copy of telegram from Commissioner of Benares, No. 22, dated 3rd June 1869.
Demi-official letter from Officiating Commissary General, dated 4th June 1869.

† Dated 2nd June 1869.

2. A copy of a memorandum† by the Right Hon'ble the Governor General in Council is forwarded herewith, from which the Home Department will see that it is His Excellency's desire that a Committee be formed for the purpose of making an immediate inquiry into the nature and course of the epidemic, and of the proper mode of treating such outbursts.

3. Any Officer under the Military Department, whose services may be considered desirable to aid in this investigation, will be at once placed at the disposal of the Home Department.

Governor General's memorandum.

Memorandum by the Right Hon'ble the Governor General of India in Council, in the Military Department,—(dated Simla, the 2nd June 1869).

The general description given of this disease does not agree with my painful recollections of rinderpest.

If it had been cattle plague of the malignant character with which England was afflicted three years ago, from the few and inefficient precautions taken, there would not be a beast alive in the neighbourhood of Benares at this moment. The accounts of the mortality also, by which it appears that only *one-half* of the cattle attacked died, do not agree with the usual effects of rinderpest, which was almost invariably fatal.

It appears also that a somewhat similar disease to that which afflicted the cattle has appeared among the sheep in the Commissariat Department.

I believed it was determined by experiment, while rinderpest was raging in England, that sheep did not take it. However it is most desirable that every precaution should be adopted, and the movement of any cattle suspected to have been in contact with a diseased beast should be strictly prohibited.

Veterinary Surgeon Barrow states that a diseased beast had been moved by direction of the Collector to a distance of four miles from cantonment; nothing could be more unfortunate than such an act.

As it is now three weeks since the outbreak of the disease took place, Mr. Barrow's letter being dated the 5th May, and no notice apparently having been taken of the affair in the District Veterinary Surgeon's Office at Umballa till the 15th of May, and as the papers never reached me till the 1st June, it is difficult to say what measures can now be adopted. If the disease has disappeared, that inquiry which would have been most desirable will be too late. If, on the other hand, the disease turns out to be rinderpest, and no precautions except those detailed in these papers have been taken, I should not be surprised to hear of frightful loss in the cattle of the whole district.

I am, however, inclined to hold a contrary opinion, and to hope that the disease in question is not true cattle plague.

The papers should all go to the Home Department, with a view to immediate inquiry by competent persons.

It is quite clear from these papers that a considerable difference of opinion has existed between the Commissariat, the District Officers, and Veterinary Surgeon Barrow.

Strict orders should also be given in the Military Department that on future occasions no delay should take place in reporting such a serious affair as an outbreak of disease among cattle at all resembling rinderpest.

No. 2856, dated Simla, the 21st June 1869.

Endorsed by the HOME DEPARTMENT.

Copy, together with the enclosures in original, forwarded to the Government of the North-Western Provinces, with a request that a Committee may be nominated to report on the

epidemic, and that the result of their inquiries may be submitted for the information of the Governor General in Council. Original papers to be returned. BENARES.

APPENDIX 3.

From COLONEL A. TURNER, *Staff Corps, President of the Committee, to the Collector and Magistrate, Jounpore,—(dated Benares, the 19th July* 1869). Col. A. Turner.

Under orders from the Government of India, a Committee is now sitting here to inquire into, and report upon, the nature and course of an epidemic which has lately prevailed amongst the Government and other cattle in Benares and the district, and of the proper mode of treating such outbreaks.

As the Committee has been told that within the last year there has been a very great loss of cattle in your district, they request the favor of your informing them if such is the fact, and if so, what is the estimated loss, and whether the deaths have been caused by disease or poison, or from both causes; what the symptoms of the disease were when it first appeared in your district, and if it still exists there, to what extent, and for any other information on the points noted you may be able to afford them. As the Committee is directed to make its report as soon as practicable, they solicit a reply at your earliest convenience.

APPENDIX 4.

From COLONEL A. TURNER, *Staff Corps, President of the Committee, to the Collector and Magistrate, Jounpore,—(dated Benares, the 29th July* 1869).

Adverting to my letter of the 19th, to your address, soliciting information regarding the existence of cattle disease in your Collectorate, similar to the Russian rinderpest, I have the honor of requesting a reply, even should you not be in a position to furnish the Committee with any information, as a copy of my letter of the 19th is appended to the Proceedings of the Committee now about to be forwarded to the Supreme Government.

APPENDIX 5.

Memorandum by M. BRODHURST, Esq., *Officiating Magistrate and Collector of Benares, on Cattle Disease in the District of Benares during* 1868-69,—*dated* 31*st July* 1869. M. Brodhurst, Esq.

The existence of cattle disease in this district first became known to me about the commencement of March last. On the 4th of that month I communicated the fact to the Board of Revenue; on the 13th idem disease broke out amongst the Commissariat cattle, and the Officer Commanding at Benares, on the 3rd April, forwarded to me, for perusal, reports of a Committee, and requested information as to the existence of any similar disease elsewhere in the district. On the 9th idem I submitted a reply, giving whatever information on the subject I was then in possession of, and on the 10th May, in reply to a letter received from the Commissioner on the 8th idem, I gave all the further particulars that had by that time come to my knowledge.

My letter to the Commanding Officer is amongst the documents before the Committee, and my subsequent report to the Commissioner has been read to the Committee from the draft copy kept for record in my office.

The disease which appeared amongst the slaughter cattle in cantonments seems to have been of the same nature as that which prevailed in the district. The slaughter cattle may possibly have contracted the disease before they entered this district, but a comparison of dates will show that they cannot have first introduced the disease into the district, for not only was the disease reported before it broke out amongst the Commissariat cattle, but its existence in the district, for some months prior to that event, is placed beyond a doubt.

It is, I think, impossible now to prove whether the disease originated in this district or was introduced from elsewhere. We know, however, that, prior to the outbreak of the disease here, there had been great losses amongst the cattle in the adjacent District of Jounpore. We have evidence before us that in May last there was cattle disease in the neighbouring District of Ghazeepore, and I have been informed by natives that a similar disease has within the last few months been noticed in one or two other adjoining districts.

From inquiries made during the last four or five years, the fact is established that cattle disease has made its appearance, at intervals, in all, or nearly all, of the districts of Southern India, and that the present is by no means the first time that widespread cattle disease has shown itself in this district, is proved by the evidence of persons who have witnessed what they narrate.

BENARES.
M. Broadhurst, Esq.

The two principal diseases of this district appear to be—

1*st, khora,* or *eczema epizootica,* or foot and mouth disease,—a disease which is apparently only too well known to the majority of native cattle owners.

2*nd,* the disease which has prevailed here for some months past, and of which the district is not yet entirely free, is of quite a different nature to that first mentioned. It is called by some of the natives *seetlah* or *matah,* or *chechuck,* synonymous native terms for small-pox; by others it is known as *haiza* or cholera, from the severe purging it causes, and from its frequent rapid termination in death. In one village the people told me they called the disease either *matah* or *haiza.*

The most apparent symptoms of the disease referred to in the last paragraph are, as ascertained from report and personal observation :—

Drooping ears; staring coat; swelling of glands of throat; refusal of food; intense heat of body; distention of the stomach; fœtid breath; running from the eyes ; a thick sticky saliva from the mouth and nostrils, and sometimes from the nostrils also blood or bloody froth; violent purging, and subsequently sometimes evacuation of blood in large quantities. Death in from one to nine days.

The District of Benares contains 1,681 inhabited villages, divided into the two Tehsildarees of Benares and Chundowlee. The disease has on the present occasion appeared in 502 villages, and is reported to have destroyed up to the close of June last 3,890 head of cattle.

Reports received show that the murrain is now restricted to five villages, *viz.,* to two in the Benares Tehsilee, and to three in that of Chundowlee. I have twice visited one of the two villages above alluded to in the Benares Tehsil,—the second time being this morning, when I was accompanied by Mr. Stanley, Veterinary Surgeon, subsequent to my first visit. I had acquainted Mr. Stanley with the result of my observations, and had informed him that although the sick cattle presented several of the symptoms mentioned above, the disease of which they were suffering was of a much milder character than I had previously witnessed in other cases. When Mr. Stanley and I first arrived at the village, the natives informed us that since my first visit, only a few days previously, the disease had disappeared. This was soon, however, proved not to be the case. We certainly found that some animals I had previously seen ailing were then well, but several beasts were still not free of disease. Mr. Stanley inspected each of these cases carefully, and he will doubtless communicate to the Committee the result of his examinations. In this village (Chooppepore, Pergunnah Sheopore, Tehsil Benares), out of 200 head of cattle, 30 were attacked with the disease during the present month, 22 died, and 8 are still ill.

In Mouzah Surai, Pergunnah Muhwaree, Tehsil Chundowlee, the disease has been much more fatal. At the commencement of the present month there were 607 cattle in the village; of these, 163 took the disease, 137 died, 19 recovered, and 7 are still ill.

The disease, checked perhaps by the advent of the rainy season, seems to be dying out of itself, as it doubtless did on previous occasions. It may safely be said that very few, if any, of the recoveries are the consequence of treatment, and the natives generally allow that the remedies they have had recourse to have been of no avail.

The Agent of the Maharajah of Benares has stated that about 50 per cent. of the cattle attacked recovered. These results, however, are, I have reason to believe, from cases within my knowledge, much too favorable for the district generally. I consider that 25 per cent. of recoveries would be found to be above the mark, and I notice that of cattle that contracted the disease in Calcutta in 1864, and that had the advantage of being treated by Veterinary Surgeons, from 50 to 90 per cent. died. I believe that of cattle attacked with rinderpest in England, before stamping out was resorted to, a certain percentage recovered; and whenever an epidemic breaks out amongst either cattle or human beings, there will doubtless always be found to be, even without treatment, a certain number of recoveries.

The deaths reported up to date are 4,123, forming an estimated loss of about one per cent. on the horned cattle of the district, and representing a money loss of nearly Rs. 40,000. Considering the length of time that the disease has continued, the total loss of the district is surprisingly small, and proves that though the disease may, in some instances, have been of a virulent type, it must generally have been of a mild character, or at all events far less contagious than could have been imagined.

There have been some cases of cattle poisoning during the year; but the more I have inquired, the more I have been convinced that the vast majority of deaths that have occurred have been owing, not to poison, but to disease. This opinion is opposed to that of the Tehsildar of Benares, but is in accordance with those of the Tehsildar of Chundowlee and of a large number of persons, cattle owners and others, to whom I have spoken on the subject. The disease has attacked horned cattle of all descriptions, the young and old, male and female, fat and lean, the

valuable and worthless. I think it unnecessary to enlarge on this point, as I am aware that the Committee do not coincide in the opinion expressed by the Tehsildar of Benares.

Judging from the symptoms described, the cattle disease of this district appears to be similar to the Calcutta epizootic and to the disease which prevailed in Sarun and elsewhere, reported upon in October 1865 by the Presidency Surgeon, Dr. C. Palmer.

Dr. Palmer writes,—"I am convinced that the disease now raging in England is the same we had here in 1864. I am persuaded it is a disease which for years has existed extensively in India, but which has up to this time not been recognized, and I am hopeful that it is amenable to treatment."

Dr. Kenneth McLeod in November 1867 also wrote a report upon cattle diseases. He describes two, which he terms *gootee* and *puschima*, both with very similar symptoms to those of the Calcutta epizootic, and he calls *puschima* "rinderpest."

Most, if not all, of the symptoms of the disease appear similar to those of rinderpest; but if it is the latter disease, it is difficult to account for its not having spread to a very much greater extent when once it has broken out in a herd, and considering that the sick and healthy cattle have very seldom been separated; it is, to say the least, singular that in many instances, whilst so few of the whole number have been attacked, that of those that have been attacked such a very small proportion should have recovered.

Whatever the disease may be, it has been seen and treated by several Veterinary Surgeons, members of the medical profession and others, and it is, I think, desirable that Government should now obtain from those of their Veterinary Surgeons in whose ability and experience they may place confidence, a decisive opinion,—1*st*, as to the name and character of the disease; and 2*nd*, as to the sanitary arrangements and treatment that should be resorted to, to guard against the disease, or to check and eradicate it.

Remedies have undoubtedly been prescribed by different authorities; but though they may be worthy of trial by Europeans or wealthy natives, they are generally quite beyond the means of the majority of the people. Any rules and remedies that may be prepared for distribution amongst the ordinary class of cultivators should be as brief, as simple, and as cheap as possible. A few such directions, drawn up by competent Veterinary Surgeons, and translated into Hindee, would probably prove of benefit to the ryot, but anything beyond this would be utterly useless.

On the outbreak of the disease, segregation is no doubt most desirable, but to effect this with the present available means is, as any one with practical knowledge must be aware, next to impossible. The people whose interests are affected are grossly careless on the subject, and throughout the greater portion of the district there is positively no one to see that an order passed for separating the healthy from the diseased cattle is carried out. In the absence of special legislation, any number of orders may be issued without any appreciable advantage.

Mr. Barrow, Veterinary Surgeon, 19th Hussars, in his memorandum No. 55, dated the 6th May last, to the address of the Inspecting Veterinary Surgeon, wrote:—

"Has also the honor to report that yesterday two cases were brought to my notice in cantonment, one of which has since died, and one case in the district adjoining. This latter, upon inquiry, has been removed by order of the Collector, Mr. Brodhurst, to a distance of 4 miles from cantonments,—a course of procedure, in my opinion, much calculated to spread infection, &c., further through the district."

Had Mr. Barrow stated the circumstances under which the removal was made, it would, I think, have been seen that no other course was open to me than the one I adopted.

The bullock referred to was tethered by the side of the Grand Trunk Road, at a distance of about 50 yards from cantonments, between the civil station and the city, at a place where there were many inhabited houses and other cattle, and by which a large number of cattle were frequently passing. The Cantonment Magistrate, at Mr. Barrow's request, brought the case to my notice. Although Mr. Barrow is a Veterinary Surgeon, and was the only one in the station, he made no suggestion as to what should be done with the diseased beast, and therefore, taking the above-mentioned facts into consideration, I thought it preferable to order the owner of the bullock to take the animal to a place near which cattle disease had already appeared, and where there was comparatively little chance of its spreading infection, than to leave it at a place, such as I have above described, where its detention would be nearly certain to cause an increase of the disease.

Mr. Barrow no doubt considered that the bullock ought to be destroyed, but in the absence of any direct orders from Government authorizing such a procedure, I should, I consider, have been deserving severe censure had I, knowing the strong feeling entertained by the Hindoos on the subject, ordered that the bullock should be slaughtered.

Both Mr. Barrow and the Inspecting Veterinary Surgeon are advocates for stamping out the disease in India as was done in England, and Dr. Palmer evidently considers this course might in some cases be resorted to; but the objections to the introduction into this country of the English practice of stamping out the disease are so obvious, and are so well understood by the Committee generally, that to enumerate them would be a mere waste of time and space.

BENARES.
M. Brodhurst, Esq.

Statement showing the result of inquiries made into Cattle Disease in the District of Benares.

PERGUNNAH.	NUMBER OF VILLAGES IN THE PERGUNNAH.			NUMBER OF VILLAGES IN WHICH INQUIRIES WERE MADE.			Number of cattle died.	Average number of deaths in each village.	Villages in which inquiries have not yet been made.	NUMBER OF VILLAGES IN WHICH DISEASE STILL EXISTS.
	Inhabited.	Uninhabited.	Total.	Number of villages in which cattle disease appeared.	Number of villages free of disease.	Total.				
Benares Tehsil.										
Dehat Amanut ...	129	11	140	62	58	120	300	...	9	1 Koorowha.
Kuswar Sirkaree ...	120	13	133	41	71	112	261	...	8	1 Jukhna.
Koleusla ...	140	8	148	16	124	140	159			
Pundraha ...	93	13	106	16	77	93	190	...	...	1 Chibbila.
Kuttehur ...	193	27	220	64	99	163	477	...	30	
Sooltaneepore ...	29	2	31	2	25	27	5	...	2	
Sheopore	107	4	111	35	72	107	143			
Jalhoopore ...	59	3	62	41	18	59	187			
Athgawan ...	138	27	165	101	25	126	486	...	12	1 Puchchimpoor.
TOTAL ...	1,008	108	1,116	378	569	947	2,208	6	61	4
Chundowlee Tehsil.										
Nurwun	127	58	185	37	90	127	410	...	...	1 Subul Jelalpore.
Burhwal	98	29	127	18	80	98	318	...	...	2 Koordeedeeah, Tajpore.
Dhoos	69	15	84	19	50	69	320			
Barrah	75	16	91	10	65	75	231	...	...	2 Chukia Purboopore.
Muhooaree ...	68	8	76	5	63	68	36			
Mujhwar	132	51	183	18	114	132	124			
Mowyee	41	11	52	4	37	41	100			
Kalhoopore ...	63	17	80	3	60	63	4			
TOTAL ...	673	205	878	114	559	673	1,543	13	...	5
GRAND TOTAL ...	1,681	313	1,994	492	1,128	1,629	3,751	...	61	9

APPENDIX 6.

Mr. E. Stanley.

Memorandum by Mr. E. STANLEY, *Veterinary Surgeon, 5th Lancers, on Cattle Disease, dated Benares,* 1869.

Having recently arrived in the station, and seeing only seven cases of the disease, four of which have died, two ill, and one recovering, I have had so little opportunity of making myself practically acquainted with the malady under consideration, that I make my remarks with diffidence, and only at the request of the Committee. From a careful consideration of the facts placed before me, and especially from the valuable information and statistics of Mr. Maynard Brodhurst, I am of opinion that the cattle disease prevalent for some months in this neighbourhood, although it somewhat resembles the rinderpest of Europe, is not identical with that disease which I saw in England in 1866, as it *fails* to exhibit some of the leading characteristic symptoms and morbid lesions of that terrible scourge, and also its wonderful power of spreading by infection and contagion, its resistance to all curative measures, and consequently its great mortality.

The disease in question appears to be of a typhoid character, and the opinion of the natives that it is *matah, i. e.,* small-pox, is deserving of careful consideration, as variola and vaccinia are indigenous, and in a virulent form have, with other diseases, frequently devastated herds in this country, as may be seen from the different reports published by Government quoted by this Committee.

BENARES.

Mr. E. Stanley.

The following symptoms were observed in the cases that came before me :—

Fever, pulse and respiration accelerated, loss of appetite, suspended rumination, harsh coat, with general prostration; the mucous membrane of the mouth inflamed only along the sides of the tongue, its anterior dorsal surface showed excoriated cracks and spots, which enlarged as the disease progressed, the sub-mucous tissue was not exposed, the spots being covered by a dirty brown exudation; no excoriations or abrasions of the gums; no appearance of vesicles or aphthous exudation were visible in any stage of these cases; the throats were not severely affected. These negative morbid lesions are rarely absent in true rinderpest and are almost diagnostic. About the second day defluxion of tears, mucous discharge from the nostrils, and diarrhœa; these become aggravated during next few days, the fæcal discharges become dysenteric and even bloody; from the sixth to the eighth days is the eruptive period; it first shows itself among the soft downy hairs at the corners of the mouth by a slight serous oozing, which develops into small excoriated spots; the muzzle swells slightly from cutaneous congestion, the eruption assumes a crustaceous form (without vesicle or pustule), is not confluent, but thickly scattered spots spread over the jaws, neck, elbows, flanks and trunk. The little crust is easily detached, and a circular excoriation, showing the true skin denuded of the cuticle and hair, is the only mark left, nothing like pus or ulceration being seen. This eruption might escape observation in its early stages, but is easily felt by passing the hand over the skin, and in the only animal recovering (twelve days sick), it can be seen raising the hair in thickly scattered spots all over the body. As soon as the eruption is fairly out, the diarrhœa changes its character, becoming more natural, lachrymal and nasal discharges diminish, temperature of the body falls, and a recovery is possible, though by no means certain.

Post-mortem appearances in a three-year-old buffalo cow, which died on the 12th or 13th day of illness (it is the only case I have been able to examine) :—

Nervous system—not examined; eyes—congested; nasal membrane—congested; lips and gums—healthy.

Tongue, palate—ulcers on the sides, base, and body of the tongue, also on the soft palate, and in the fauces surrounding the glottis, of irregular size and shape, the mucous membrane surrounding them highly inflamed and purplish (but no aphthous exudation), the ulcerated spots being filled with a hard cheesy excretion, which is not to be removed by scraping with a knife.

Pharynx, œsophagus—healthy; larynx, trachea, bronchial tubes—slightly congested; lungs—slightly emphysematous; pleura—healthy; heart—healthy—clotted blood and lymph extending from ventricles to auricles; pericardium—healthy; blood vessels—not examined; blood—partly fluid, partly coagulated; lymphatics—not examined; peritoneum—healthy; liver—healthy; gall bladder—full of bile; spleen—healthy.

Rumen, reticulum, omasum—contents semi-fluid; no abnormal appearances of lining membrane.

Abomasum—contents fluid, superficial small, ulcerated spots towards cardiac opening, slight congestion.

Small intestines, duodenum—well marked, scattered ulcerated spots similar to those observed in the mouth, patches of congestion in the jejunum, with scattered ulcerated spots, which in some parts were confluent; the ulcerations became more numerous on approaching the cœcum, and by removing the excretion from the base of the ulcers, the muscular tunic was exposed.

Cœcum—here the ulcerations abounded, and were so confluent that scarcely a spot of mucous membrane remained.

Colon—confluent ulcers scattered through its entire length, and in one place, where the bowel was much inflamed, there was a sort of aphthous deposit.

Rectum—at its junction with the colon for about 2 feet, the mucous membrane was entirely destroyed by ulceration, and the peculiar cheesy excretion gave a rugged appearance, almost resembling the lining of the rumen, the ulcers becoming more isolated towards the anus; intense inflammation was nowhere apparent.

Uterus and ovaries—healthy; vagina—healthy; vulva—healthy; udder—healthy.

Skin—eruption well marked over the whole body, superficial excoriation all over the head, probably caused by the crusts being washed off, as they were abundant under the jaw. The crusts are readily removed by gentle friction, the hair and cuticle coming away with them, leaving circular superficial excoriations not larger than split peas.

No pustules or vesicles were anywhere visible.

Remedial measures.—If rinderpest breaks out in India, the only remedy is to stamp it out. Mr. Brodhurst ably proves this course to be impracticable with the ryots' cattle. Even the separation of healthy from diseased could not be carried out without legislative force, as the ryots are so utterly apathetic and blind to their own interests. Segregation alone, properly carried out, would have a wonderful influence in checking the spread of this disease. As for medicinal agents, the reports already quoted abound in prescriptions. I would suggest an aperient dose when the animal begins to sicken, and, as the disease progresses, give cordials,

BENARES. Mr. E. Stanley.

tonics, and then stimulants. As far more benefit may be expected from good nursing and attention to general comfort than from physic, drenches of meal gruels, a little and often, should be given to keep up the strength until the function of the rumen (*viz.*, rumination) is restored. The anatomical arrangement of the stomachs is such that the greater quantity of fluids pass directly by the first three stomachs into the abomasum or true digestive stomach, therefore I am averse to making an Apothecary's store of it. Facilitate the free circulation of fresh air, bed down with clean straw, and when unable to rise, rolling the animal three or four times a day on alternate sides, will afford great relief. Cleanliness and protection from rain will assist recovery.

As prophylactics, dilute carbolic acid, or its substitute, tar-water, might be given to the healthy; also rock salt placed within their reach. Inoculation and vaccination might be tried. Carcasses should be buried 6 feet under ground, with their skins slashed, or if it is desirable to save the skins, they should be disinfected in lime-water.

From these few cases I can safely say the disease is not *khoorah, i. e.*, eczema epizootica, neither do these cases answer the description of *puschima,* as given in Dr. McLeod's report; but its analogy to *gootee, matah,* or small-pox is evident. It appears to me *gootee* and *puschima* are the same disease,—the former when it is of a mild form, the latter when it is severe. Dr. Murchison, in the Third Report of the Royal Commission on Cattle Plague, published, London, 1866, considered rinderpest in many respects resembled the Indian small-pox. From the cases I have seen, the disease is not true vaccinia or variola, proved by the absence of the diagnostic pustules, by no cases of inoculation having occurred among the villagers or infection among the sheep (the eruption of small-pox in sheep is very marked, and could not escape observation). From these remarks it will be seen that I incline to the opinion that the disease is of a specific character, and from the history of previous outbreaks, I conclude it is endemic in India in the same scale as cholera, and therefore may be expected to occur periodically in localities favouring its generation. It is worthy of note that the rinderpest of Russia is far less fatal among the Steppe cattle where it originates, which will explain their living to carry it to surrounding countries.

The disease under consideration has by some been attributed to poison, but I may say that no agent I am acquainted with could cause such a train of symptoms or *post-mortem* appearances, though there can be no doubt cases of poisoning have occurred in the district.

APPENDIX 7.

Mr. C. Barrow.

From MR. C. BARROW, *Veterinary Surgeon, 19th Hussars, to the President of the Special Committee for the Suppression of Rinderpest,—(dated Benares, the 22nd March* 1869).

Having carefully examined various cases of disease amongst the bullocks in the Commissariat Department, primarily at the request of Captain Chester, and afterwards by order of the Officer Commanding the Station, I have the honor to report, for your information, that in my opinion the said bullocks, &c., are infected with a highly contagious and infectious fever, analogous to the Steppe murrain, rinderpest, or cattle plague that ravaged the herds in various parts of England during the years 1864, 1865, and 1866. The analogical symptoms as at present recognised by me are the following:—

In the primary stages of the disease, a slight increase of pulse, short, husky cough, watery discharge from the eyes, nostrils, and mouth, loss of appetite, dulness, staring coat, and occasionally constipation; as the disease becomes more advanced, diarrhœa sets in, accompanied with bloody discharge; slimy and copious discharge from the eyes, nostrils, and mouth, which adheres to the sides of the face, nostrils, &c.; increase of respiration accompanied with moaning and panting; great prostration, and death in from three to four days after the animal has first shown the disease. The analogical *post-mortem* appearances are as follows:—The first stomach, as also the second and third, are usually perfectly full of ingesta, but healthy; the fourth stomach, being the one showing signs of disease, the mucous membranes of which are strongly marked by extravasated blood, the same appearance existing along the course of the small intestines; the lining membrane of the heart, urinary organs, nostrils and trachea also showing the existence of inflammation; the gall bladder unusually full, and contents very dark in color; the membranes of the spinal cord and brain much congested.

The foregoing symptoms, &c., I am enabled to recognise, having been appointed Government Inspector during the outbreak of rinderpest in the County of Cambridge.

I have also the honor to submit to your notice, for the approval of the Committee, the following few suggestions:—

1. That printed hand-bills be circulated and posted in the bazaars, with description of symptoms of disease, &c., with orders to the Police to bring any suspicious cases to the notice of the Veterinary Surgeon, and to see the said suspicious case immediately removed from any healthy animals they may have been herded with at the time.

BENARES.
Mr. C. Barrow.

2. That when an animal has been pronounced by the Veterinary Surgeon to be diseased, the said animal should be immediately destroyed, the hide slashed, and the carcass immediately buried,—care being taken that they are buried at a sufficient depth.

3. That any suspicious case shall on no account be allowed to leave cantonments without the sanction of the Committee, the Cantonment Magistrate, or Veterinary Surgeon, but that the said animal shall be placed in quarantine for a period of nine days.

4. That all animals intended for slaughter in cantonments shall firstly be inspected by a competent person nominated by the Committee.

5. That no cattle should be allowed to enter or leave an infected district.

I have also the honor to forward a report of the number of cases that have occurred since the outbreak, as also a list of the number of deaths, &c., to date.

APPENDIX 8.

From MR. C. BARROW, *Veterinary Surgeon, 19th Hussars, to the President, Special Committee, Cattle Disease,—(dated Benares, the 6th May* 1869).

I have the honor to report that, after a lapse of twenty-one days, the contagious disease mentioned in my report of 23rd March 1869 has again made its appearance amongst a fresh herd of cattle that arrived in this station for Commissariat purposes on the 20th April 1869.

The first animals observed showing symptoms of disease (5 in number) were immediately separated from the rest, but succumbed to the disease from three to four days after the first notice of the attack had been given, during which time numbers of others had shown symptoms of the affection, and since which date the disease has been steadily on the increase, as will be seen by the statistical statement appended by Captain Chester, the Executive Commissariat Officer. Every means has been resorted to in carrying out to the fullest extent freedom from contagion and infection by separating the animals, the affected and non-affected, as much as possible.

From a tolerably extensive experience of the analogy of this disease in England, I would beg most strongly to recommend that those measures be carried out at this station (as far as compatible) which were adopted by the Members of the Royal Commission appointed to inquire into the origin, &c., of rinderpest in England, and by the adoption of which measures the disease was eventually stamped out. Amongst the principal measures, the following should, in my opinion, be immediately adopted, *viz.*:—

Frequent inspection, immediate segregation, prompt destruction of any animal when the disease has become fully developed, and that at this stage *no treatment* be allowed to be adopted. With reference to this last recommendation, so convinced were the Members of the Royal Commission of the ill effects attending the treatment of any diseased animal, that any person detected of this offence rendered himself liable to a penalty not exceeding £20.

I was induced some three weeks ago, as no fresh cases had occurred for a period of 20 days, to recommend to the Committee the remission of the restriction on cattle in cantonments ordered by them. The fresh herd of Commissariat cattle arrived during that period, and the disease showing itself amongst them, information was immediately given and the usual restriction again enforced. A disease of a somewhat analogous type has also appeared amongst the sheep in the Commissariat Department,—up to the present date 9 having died and 7 suspicious cases remaining.

APPENDIX 9.

Return of Government horned cattle in the Benares Commissariat affected during the outbreak of cattle disease during the months of March, April, and May 1869.

Capt. Chester.

Number attacked.	Number destroyed.	Number died.	Number recovered.	REMARKS.
273	18	76	179	The cattle that recovered have, with the exception of 5, been issued as rations.

BENARES,
The 24th July 1869.

H. D. E. CHESTER, *Captain,*
Sub-Asst. Commy. General.

APPENDIX 10.

JOUNPORE. R.J. Crosthwaite, Esq.

From R. J. CROSTHWAITE, Esq., *Officiating Joint Magistrate, Jounpore, to the President of the Committee, Benares,—(No.* 372, *dated 2nd August* 1869).

In reply to your letter of the 19th ultimo, I have the honor to report that there has been a very great loss of cattle in this district during the last year. Mr. Daniell, the then Magistrate, in his report to Government, estimated the loss at not less than 12,000 head. The cause of this mortality he ascribes to disease and poison. From his report it would appear that the greater number of cattle died of poison. The poisoners were almost always chamars, and it appeared that they were supplied with poison, chiefly arsenic, by dealers in hides. Three men employed in this district to procure hides admitted to Mr. Daniell that they had sent upwards of 4,000 hides down the river to their employers. Since attention has been drawn to this crime, it has undoubtedly decreased, and the cultivators are now on their guard, and have succeeded in bringing many of the culprits to justice. At first they were persuaded by the chamars that a demon was destroying their cattle, and money was raised by a cess on every house in the village, and the amount made over to the chamars to offer sacrifices and drive the demon away. As the demon, however, re-appeared in a short time, and the zemindars were enlightened by Mr. Daniell's proceedings, the chamars are no longer able to impose on the owners of cattle, and there is some hope that a stop will be put to this crime. There is no doubt that a ball of *atta* mixed with pounded arsenic and wrapped up in leaves is generally used for poisoning cattle. They sometimes thrust a stick covered with a poisoned cloth into the intestines of the animal; they also thrust a needle wrapped up in cloth into it, but generally poisoning is resorted to.

2. With regard to disease among cattle, inquiries are now being made in order to reply to your letter; but as an early answer is required, I can only state on this point my belief that there is not at present any epidemic among cattle. I am also of opinion that a number of the deaths of cattle formerly accounted for by disease were really caused by poison.

BENARES. W. A. Forbes, Esq.,

From W. A. FORBES, Esq., C. B., *Officiating Commissioner, 5th Division, to the President of the Indian Cattle Plague Commission, Calcutta,—(No.* 155, *dated* 21*st May* 1870*)*.

I have the honor to forward certain papers* and correspondence connected with a disease which has lately shown itself amongst the cattle of the Benares District.

* From District Superintendent of Police, to Personal Assistant, Inspector General of Police, North-Western Provinces, No. 426, dated 13th April 1870.
From Magistrate of Benares, to Commissioner, No. 50, dated 9th May.
From Magistrate of Benares, to Commissioner, No. 51, dated 10th May, and one enclosure.
From Magistrate of Benares, to Commissioner, No. 54, dated 16th May, and one enclosure.

2. Mr. Lemon, Veterinary Surgeon, Royal Horse Artillery, is of opinion that it is not contagious, but that gentleman has lately been making further investigations, the result of which I will request the Magistrate to furnish you with.

Captain G. F. J. Graham.

From CAPTAIN G. F. J. GRAHAM, *District Superintendent of Police, Benares, to the Personal Assistant to Inspector General of Police, North-Western Provinces,—(No.* 426, *dated* 13*th April* 1870*)*.

I have the honor to submit a brief report on cattle disease and cattle poisoning lately prevalent in this district.

Cattle poisoning.

2. On the 20th ultimo I was informed that cattle disease was prevalent in the Phoolpore Division, and at once ordered the Police to take measures to prevent its spreading. Native Doctor Chedee Sing was despatched by the Civil Surgeon to Rughoonathpore, and in consequence of reports received by him and my Police, the Magistrate of the District, the Civil Surgeon, and myself proceeded to Rughoonathpore on the 26th ultimo. As we suspected that the cattle had been poisoned, one of the animals which died whilst we were there was opened, and the contents of the stomach and the kidneys were forwarded to the Chemical Examiner at Allahabad. His report has not yet been received. We returned on the 27th ultimo, and from that day to this there has not been a single case of illness amongst the cattle at Rughoonathpore. This is strong evidence of poison having been the cause of the deaths. Arsenic was found in the houses of several chamars, and these were arrested and sent up for trial.

3. Mr. Inspector Clarke was then deputed to make enquiries into the cases of disease which occurred in other villages, and succeeded in discovering arsenic in several chamars' houses, and in arresting six suspected poisoners. In one case the poisoners, a boy and an old woman, were caught in the act by a zemindar, the owner of the cattle on which the attempt was made, and poison was found on their persons.

BENARES. Captain Graham.

4. The following is a brief statement showing the several poisoning cases in which action has been taken by the Police since 26th ultimo :—

1*st.*—CHOTOO CHAMAR of Rughoonathpore (Phoolpore illaqua), accused of giving the poison; under trial.

2*nd.*—RAMDEEHUL BHUR, Gorait of Baipoorie (Phoolpore Station), accused of selling arsenic to Chotoo; comes into Benares and buys arsenic; under trial. Cattle poisoning.

3*rd.*—RAM DUSSOA, boy, chamar of Naiepoorie, had poison in his house; under trial.

4*th.*—SHEW CHURN CHAMAR of Durrekhoo (Rohinea), accused of giving arsenic to Mussamut Doolmee (No. 7); sentenced to 1½ year's imprisonment, 8th April 1870.

5*th.*—BUTCHA CHAMAR of Luttooa Secrole sold arsenic to Shew Chamar; confesses; sentenced to 1½ year's imprisonment, 8th April 1870.

6*th.*—LOTUN CHAMAR of Thurriadee (Chowbeypore illaqua), accused of instigating poisoning, buys hides, bought two from Ram Doss, No. 2; under trial.

7*th.*—PHOOLOOA CHAMAR (boy) and Mussamut Doolmee of village Durrekhoo (Rohinea illaqua), caught in the act of giving poison; former sentenced to 15 stripes, latter to one year's imprisonment, 8th April 1870.

5. Having thus briefly noted the poisoning cases in which action has been taken by the Police, I will now proceed to the question of cattle disease, the prevalence of which during the past five months in this district is undoubted.

6. The following is a list of villages in which, during the present enquiry, it has been ascertained that disease has been prevalent :— Cattle disease.

1*st.*—Rughoonathpore; 42 cases, 15 recovered, 27 died.

2*nd.*—Kaithowlie; since January 40 cases, all died.

3*rd.*—Ghumbheerpore, Nataipore, and Aheerapore; since January 89 cases, 75 died, 14 recovered.

4*th.*—Phoorapore; 9 cases, 4 died, 5 recovered.

5*th.*—Kutowra; 6 cases, 4 deaths, 2 recovered; all these villages are within a circle of seven miles.

7. From the above it will be seen that, as far as we have yet ascertained, 184 cattle have been attacked by the disease, out of which 36 have recovered and 148 have died. This is a serious loss to the district.

8. As regards the origin of this disease, two probable causes are the badness of fodder and the impurity of the water. In the villages which I inspected myself on the 7th and 8th instant, in company with Veterinary Surgeon Mr. Lemon, Royal Horse Artillery, I found that in most cases the food was of the worst description possible. The past year having been one of scarcity, the poorer classes have been unable to give their cattle any better food than barley or rice-stalks, dried sugarcane leaves and the bushes of gram mixed up together and steeped in water. This mixture is also often kept for days till it becomes stinking. In this state it is given to the cattle, and it is not to be wondered at that they die in numbers. Some of the people believe that the mortality is caused by the cattle eating the dried rice-stalks, and it is certainly curious that the commencement of the disease in the villages before mentioned coincides with the time of the rice being cut, *viz.*, in November last. With regard to the water, it of course varies in every village, but in those mentioned in para. 6, which I examined, it is of the very worst description. The inhabitants of the whole of them suffer to a great extent from *gootee*, swollen testicles, ringworm, and other diseases likely to be brought on by impure water. Origin.

9. As regards the arrest and mitigation of the disease, we can direct the segregation of the infected animals and such other measures as may seem desirable, but much also depends on the treatment which the affected animals receive at the hands of the owners. In this district the Magistrate has issued strict orders for the segregation of the sick cattle, but there are great difficulties in the way of this being thoroughly carried out. As much as possible, however, it is being done. Rules regarding the treatment of the sick animals are being drawn up by Mr. Lemon, and will be proclaimed throughout the district. The treatment which the infected animals receive from the owners may be summed up in the one word—*nil*. Once ill they generally leave them to their fate, though in a few instances *ghee* or *suttoo*, and leaves of the wood-apple tree (*bael*) are given to try and recover it. In most instances the owners have been too poor to afford *ghee* or *suttoo*. In the case of the wealthier classes the case is of course different. Rajah Sir Deo Narain Singh tried every remedy last year when the disease was amongst his cattle, but none had any effect. Segregation.

10. It will thus be seen that cattle disease has been prevalent in the Phoolpore Division since last November, and that certain chamars of certain villages have taken advantage of its presence to poison animals for their own profit. No clue has yet been found to the instigators of the poisoning, and I am inclined to believe that the chamars are the sole culprits.

11. The disease is still prevalent. Poisoning has, I think, been entirely put a stop to, the chamars being now too much afraid to continue the practice. All the villages in which

BENARES. Captain Graham.

disease or poisoning was reported to be rife up to the 8th instant were visited by me and Mr. Lemon, Veterinary Surgeon, Royal Horse Artillery, on the 7th and 8th instant. His report is herewith appended. He is still engaged in investigating the disease.

Statement of Cattle Sickness, Recoveries, Deaths, &c., from 1st January to 30th April 1870.

Names of Stations.	Number of cattle reported sick.	Names of sickness.	Number recovered.	Number still sick.	Number died.	Remarks.
Ramnuggur	80	Unknown, but supposed to be foot and mouth disease.	9	...	71	The mortality amounts to 82 per cent. of attacked.
Allynuggur	5		...	...	5	
Chundowlee	86		...	...	86	
Sydrajah	3		...	...	3	
Sukuldeeha	307		3	...	304	
Chowbeypore	340		95	...	245	
Phoolpore	385		77	12	296	
Burragoon	103		26	24	53	
Rohinea	56		2	...	54	
Adumpoora	2		.	...	2	
Cantonment	8		1	...	7	
Dussassonedh	12		...	...	12	
Chetgunge	1		...	...	1	
Total ...	1,388		213	36	1,139	

A. J. Lawrence Esq.

From A. J. LAWRENCE, Esq., *Officiating Collector and Magistrate, Benares, to the Commissioner of the 5th Division, Benares,—(No. 48, dated 3rd May* 1870).

I have the honor to bring to your notice, with the view of your communicating with Veterinary Surgeon Hallen and the Cattle Commission, the great mortality that is at present destroying the cattle of this district.

Poisoning.

2. The Tehsildar first reported the matter about a month ago. At that time we were more suspicious of poisoning than of disease, and no doubt the chamars were taking advantage of illness being abroad to destroy cattle and secure skins. But our visit to Rughoonathpore, and the orders given to bury all dead cattle, and the convictions that ensued in a few proved cases, put a stop to poisoning; and the many deaths I have now to report are chiefly, if not entirely, the result of disease.

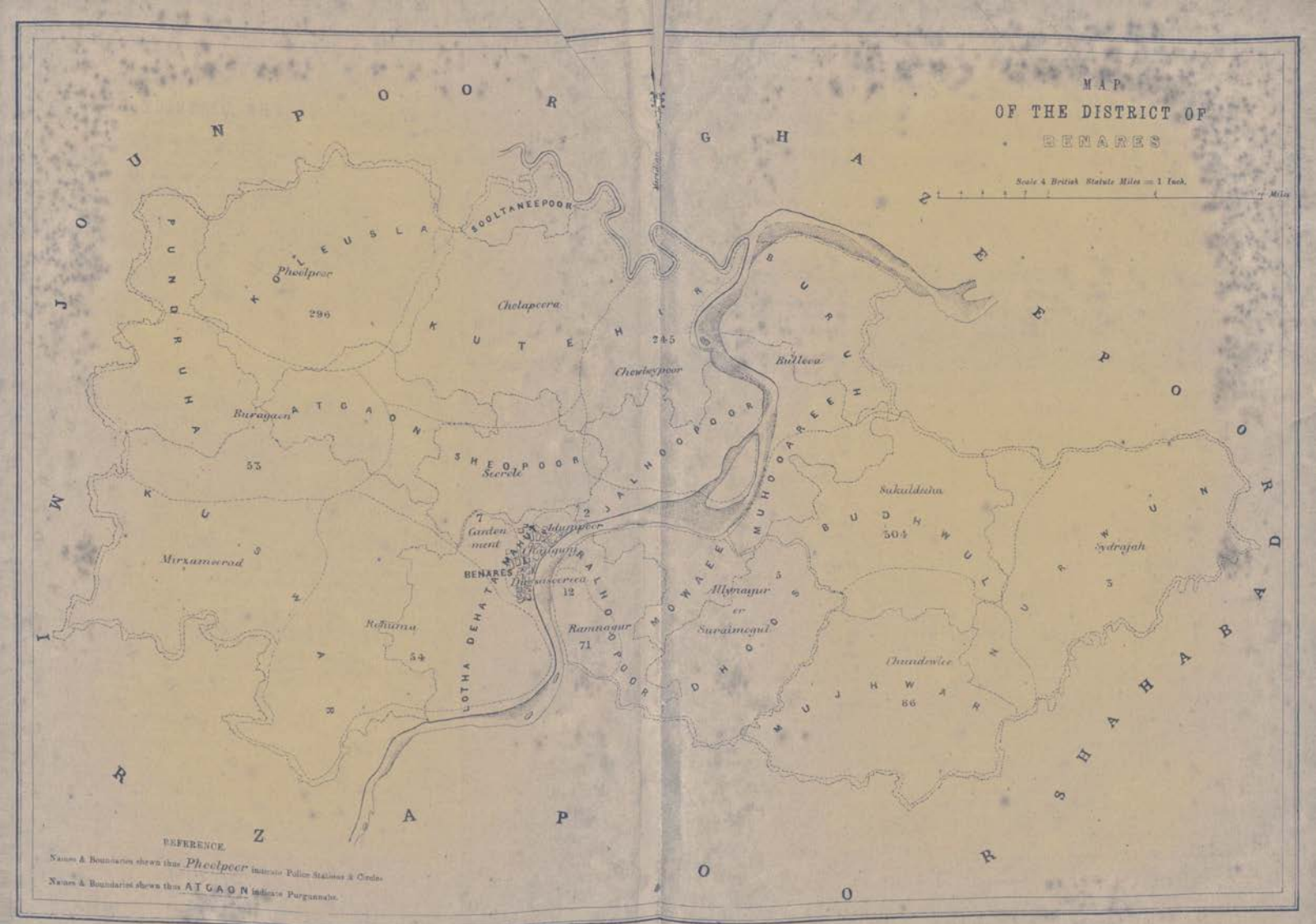
Cattle disease

3. Captain Graham's letter of 13th ultimo, copy of which I enclose, shows that everything has been done that was possible to stem the tide, but with little or no effect. From one village indeed it is reported that of 153 cattle that were attacked, 77 recovered, from their owners paying attention to Veterinary Surgeon Lemon's instructions; but I have not much faith in these returns. From a village on the Chundowlee side of the Ganges a report came that 21 had succumbed to the disease, but on reference to the zemindars, they explained that while 18 died from natural causes, only 3 were victims to disease. I have no reason to believe that the Putwaree's statement is less correct than the zemindars'. The latter are averse to giving statistics that will engender enquiry, and result in their being called upon to give effect to health rules, segregation of cattle, and such like. They also fear collision with the chamars, which often follows observance of Magistrate's instructions in cases as that under report.

Returns.

4. The general abstract now submitted is not absolutely correct; some stations are shown to have escaped altogether. The results disclosed are most sad. The map that accompanies shows where the disease has been most prevalent. It commenced considerably earlier on the Benares side of the river, but the number of deaths in first five stations of statement shows that neither side has much reason to boast of immunity. The Assistant District Superintendent will, now on the spot, test as far as possible the accuracy of the returns.

5. As regards the disease itself, we are quite powerless. The Police, under Captain Graham, have done their best to ensure obedience to directions. To Captain Graham and Veterinary Surgeon Lemon my thanks are specially due. Perhaps you would think fit to bring the latter officer's gratuitous services to the notice of Government. Mr. Lemon had practical acquaintance with the cattle disease in England. He is now willing, if he can obtain his Commanding Officer's permission, again to go out and see what further enquiry may elicit.



Lithographed at the Surveyor General's Office, Calcutta, March 1874

Brief opinion by MR. J. H. LEMON, *Veterinary Surgeon, regarding disease among Cattle.* BENARES

Mr. J. H. Lemon.

From the few cases which I have seen I have no hesitation in saying the animals affected are likely to have been so from causes principally owing to bad food, uncleanliness, and want of care. The symptoms of disease varied, but in every case the digestive organs were affected.

In the one case on which I had an opportunity of making a *post-mortem* examination, death resulted, in my opinion, from impaction of the stomachs, which prevented their proper functions.

That there is a disease of the epizootic character amongst the cattle, I have no doubt; but the cases presented to me (the majority being in a convalescent state) had no symptoms of cattle plague, with one exception. Further investigation is necessary to enable me to examine the animals in different stages.

I have drawn up a few rules for guidance of owners of cattle which may be acted on in the meantime.

OBSERVATIONS BY THE CATTLE PLAGUE COMMISSION.

Secrole, Benares, 30th May 1870, 7-40 A. M. SECROLE

A bullock owned by Baboo Doorga Prosaud of Secrole, four days ill; five years old; condition fair; the animal is lying down; discharge from eyes, nose, and mouth; ears drooping; excoriations on the gums, with aphtha, on removing which an ulcerated surface is seen; purging watery stools from yesterday; off feed and very thirsty; no eruption on the skin; reticulated dry muzzle; animal very weak. Case No. 1.

Another bullock belonging to the same person, 8 days ill; age 6 years; condition good; discharge from eyes, nose, and mouth; ears drooping; muzzle dry; has been purging watery stools for the last 3 days; picks a little; gums congested; buccal papillæ slightly congested; no eruptions on the skin; great thirst; coat staring. Case No. 2.

Another bullock belonging to the same person, age 6 years; condition good; 15 days ill; off feed; great thirst; ears drooping; purged before, but the bowels were constipated for 2 or 3 days; it again commenced to have loose stools yesterday; mucous discharge from eyes, nose, and mouth; muzzle reticulated, dry, and fissured; eruptions on the neck, but very minute; mouth healthy; subcutaneous effusion around eyes. Case No. 3.

Mordaha, 5 miles north of Secrole. MORDAHA

A cow calf; 18 months old; sick 10 days; at present shivering; aphthous ulcer on lower gum; the rest healthy; profuse discharge from eyes, nose, and mouth; muzzle dry; skin under eyes excoriated from discharge; has commenced picking; did not purge; dung healthy; doing well; eruptions on the shoulders and neck in the form of desquamation of cuticle. Case No. 4.

A cow buffalo; 4 teeth; 6 days ill; condition fair; slight discharge from eyes, nose, and mouth; feeds a little; no purging; mouth healthy; buccal papillæ very slightly congested; congestion of conjunctivæ; œdema all round the eyes; gave birth to a calf 6 days ago; the calf examined and found to be ailing; the mucous membrane of mouth, and papillæ specially, highly congested. Case No. 5.

A cow; condition poor; age 6 years; 15 days ill; animal recovering; discharge from eyes, nose, and mouth; feeding; mild case; bowels improving; slight shivering. Case No. 6.

A bullock, aged 10 years; condition poor; 10 days ill; picks a little; bowels relaxed and mixed with mucus; ears drooping; discharge from eyes, nose, and mouth; no eruption on the skin; purging mucus. Case No. 7.

A bullock, 6 years old; condition poor; 10 days ill; profuse discharge from eyes, nose, and mouth; small aphthous ulcer on lower lips, cicatrizing; angles of mouth congested; no eruptions on the skin; ears drooping; picks a little; bowels relaxed; animal recovering. Case No. 8.

A cow, 4 years old; 10 days ill; dung soft; discharge from eyes, nose, and mouth; muzzle dry; excoriations on the gums; but now animal recovering. Case No. 9.

A bullock, 8 years old; reported ill since yesterday; feeds a little; excoriations on the gum. On examination, the whole of the mucous membrane of the mouth found congested; bowels relaxed. Case No. 10.

A male buffalo, 8 years old; 16 days ill; discharge from eyes, nose, and mouth; bowels all right; feeding. Case No. 11.

Cow, 2 years old; 4 days ill; purging watery stools mixed with mucus; vagina congested; aphthous ulcer; off feed; thirst; ears drooping; discharge from eyes, nose, and mouth. Case No. 12.

A bull calf, 4 months old; 2 days ill; excoriations on the gums in the right side; off feed; discharge from nose. Case No. 13.

Eighteen head of sick cattle of this village brought for examination, all of them seem to be mild cases and recovering; seven cattle have died in the village.

BENARES.

Evidence taken by the Commission on the 30th May 1870.

Prevalence of *matah*. BOUSSIE CHOWDHRY, JUGGUT SING, JUNGI PATTUCK, RAM LAHAL CHOWDHRY, agriculturists of Mordaha, say:—The disease called *matah* appeared in this village 15 days ago; it is still prevailing; 7 head of cattle have died, and 18 or 19 are still ill; there are about 200 head of cattle in this village. The *beparies* brought a herd of cattle from Oudh in Bysack (April) last. Source of outbreak. There were some sick cattle in that herd, and they have communicated the disease to the cattle of our village. Four or five years ago there was another outbreak of the same disease, and the mortality then was greater than it is now. The disease is contagious, and the sick cattle therefore Segregation. are kept separate from the healthy; we have observed segregation for a long time. We keep the cattle in separate houses at short distances. Carcasses are thrown away and the skins are eaten Disposal of hides. by jackals. The chamars take the hides of cattle that die of ordinary disease; but they are not allowed to take *debee* hides, inasmuch as such a custom would spread contagion. There is also *Matah* spread by infection. an order from the Magistrate to this effect. One of the villagers bought a bullock out of the *beparies'* herd; in 8 days it died of *matah*, and soon after the disease spread in the village, when the *beparies* left; all their cattle were healthy; they lost no cattle in this village; we did not observe any sickness among their cattle, nor did we know, when buying, that this particular animal was ill. It was sold cheap, *i. e.*, for Rs. 4 or 5. The dealers come to this village Cattle dealers. generally twice every year. One set of *beparies* come from Goruckpore and bring about 200 head of cattle or so, and another set come from towards Oudh. We have not seen any outbreak Previous outbreak. of *matah* except that which occurred 4 or 5 years ago. The present outbreak has turned out Price of stock. very mild. The price of cattle has increased 25 per cent. during the past 10 years. We Cattle poisoning. have heard that the chamars are in the habit of poisoning cattle, but we have never seen them Breeding. doing so, nor have we any occasion to suspect poisoning; special bulls are not kept up for breeding, but the Brahminee bulls are allowed to serve cows. This is a Hindoo village. Young bulls are allowed to mix with cows. They are taken to the city of Benares and there allowed to Feeding. graze and go about. The cattle are allowed *bhoosa*, and the cows only are allowed to graze during the day, but not the bullocks; even the milch cows are allowed to graze; they are also allowed oil-cake at night. The disease has broken out in houses situated close to each other; Common pasture ground. in fact all the village houses are close together. There is a common pasture ground for our cattle, which consists of 100 or 125 beegahs of land. The animals feed on *doob* grass in this pasture. There is another disease called *khoorah* among cattle. The mouth and feet get sore, the mouth becoming affected first. During the last rains we had *khoorah*, but this distemper does not prove fatal. We make the cattle stand in water and wash their mouths and apply *ghee* and some herbs. There are 60 or 70 houses in this village. The village is healthy as far Foot and mouth disease. as human beings are concerned; we have seen *khoorah* often in this village; it comes every year or every two years; cattle do not die of *khoorah*; we never saw a fatal case of *khoorah*; we do not know any other disease among cattle.

Breeds of cattle. Dherara cattle are best for every kind of work, but the cattle on the other side of the Jumna give more milk. We never tried to get a cross-breed between country and Dherara cattle; the cattle are watered from tanks generally, but well water is also given. We get buffaloes Treatment for *matah*. from the other side of the Jumna. We give *konda* bark and ghee in *matah* cases. There is no disease in any other villages near this. We never give bhang to diseased cattle; the cattle of Gobany, Pohan, Wandi, and Bampoor and the cattle of our village graze in the same field. There is no disease in any of these villages. The authorities have ordered us to give salt to sick cattle.

[Here the zemindar's Amla says that he never got any instructions as to the treatment of sick cattle.]

Benares, 30th May 1870, 5-30 A. M.

Case No. 14. A bullock owned by Doorga Prosaud; condition fair; age 7 years; 3 days ill; off feed; great thirst; ears drooping; excoriations on roof of mouth; no discharge from eyes, nose, and mouth; purging mucus and little blood; coat rough.

Case No. 15. A white bullock of the same party; age 6 or 7 years; condition good; discharge from eyes, nose, and mouth; buccal papillæ congested; ill since yesterday; purging oily matter; off feed; thirst; ears drooping; muzzle dry; no eruption on the skin.

DOORGA PROSAUD AHEER, 23 years old, says:—I am Cattle Contractor of the Benares Municipality. I own, or rather owned a few days ago 102 head of cattle—all bullocks; but the disease Outbreak of *matah*. *matah* broke out among my cattle on the 18th of May last, and 14 head of cattle fell ill Mortality. one after another, and six died; 3 have recovered, and 5 are still ill. My cattle are yoked to the Symptoms. conservancy carts and go about the city; the cattle when sick are off feed and have great thirst; ears drooping; when the affected animal approaches death, eruptions appear on its skin; the cattle (51 in number) were exposed to the sun all day and kept in one place, 2 miles off Cattle how employed. from the others, and disease appeared among this herd first. My cattle remove all the rubbish Segregation. and city refuse, but not carcasses. I have always kept sick cattle at a distance of 2 miles from Treatment. the place where the healthy ones are stalled. I used to administer *ghee* and country spirits

to sick cattle. I also mixed up flour and water and gave it to sick animals. I never saw this disease before among cattle. I consider the disease to be contagious, and this accounts for my separating sick from healthy animals. BENARES. Disease not before observed. Contagiousness

DISTRICT OF AZIMGURH.

From J. SLADEN, Esq., *Officiating Magistrate of Azimgurh, to the President, Cattle Plague Commission,*—(*No.* 245, *dated* 19*th September* 1870). AZIMGURH. J. Sladen, Esq.

In reply to your letter No. 113 of 18th July last, I have the honor to state that about the months of April, May, June, in the present year, in the Tehseels of Mahaul, Nizamabad, Mohamedabad, and Sugree some cattle were attacked with what the natives call *chechuck*, and died from its effects; the symptoms of the disease being that the animals refuse food, foam from their mouths, don't dung, and that their bodies rather swell. Last year too, between June and August, a few head of cattle are reported to have died from the same cause in the Tehseels of Deogaon and Secunderpoor, and at the present moment a few sporadic cases are reported from the former of these two Tehseels.

2. I have no special facts to relate in connection with these outbreaks. My belief is that this form of disease prevails more or less in most districts during some portion of the year.

DISTRICT OF GHAZEEPORE.

From W. OLDHAM, Esq., *Officiating Magistrate of Ghazeepore, to the President of the Cattle Disease Commission, Calcutta,*—(*No.* 350, *dated the* 18*th July* 1870). GHAZEEPORE. W. Oldham, Esq.

I have the honor to inform you that since you left Ghazeepore cattle disease has broken out in several villages in the vicinity of the city towards the north and east.

The symptoms of the disease are said to be diarrhœa, swelling, and foaming of the mouth.

From MR. J. BOURKE, *Stud Department, to the Officiating Magistrate, Ghazeepore,*—(*dated* 10*th August* 1870). Mr. J. Bourke.

I have the honor to report for your information that I visited Khalispoor village on the 25th ultimo, and examined two sick bullocks, which were the only two animals sick at the time, and also made *post-mortem* examination of a buffalo that had died the previous night, and found that the disease was rinderpest,—a very contagious fever of a fatal character.

I also visited Noorpoor on the 5th instant, and found that the disease had abated there, and there were none sick, with the exception of a few convalescent cases that had had only slight attacks of the plague; and on enquiry I found that the disease terminated fatally in almost every case at the first outbreak, which took place some two or three months ago, but in the decline the mortality was not so great, which is a characteristic of the disease. Even under the best of treatment, the mortality is very high, and it is supposed three-fourths of the cattle attacked by this dreadful fever die.

I think it would be useless laying down any rules for the treatment of the disease by Police Officers out in the villages, as very little good would result from it. The prevention of the disease should be attempted by strict separation of the diseased and infected animals, and when an animal dies, it should be buried deep in the ground, skin and all, at a convenient distance from the village, and not in the centre of the village under the very eaves of the houses, as has been done in the two above-named villages.

ALLAHABAD DIVISION,

COMPRISING THE DISTRICTS OF BANDA, FUTTEHPORE, HUMEERPORE, JOUNPORE, CAWNPORE, AND ALLAHABAD.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	.....	Page 373.
Banda.	*M. Sandys, Esq., Collector of Banda.*	661	18*th May* 1868 ...	*Selections, Government of India, No.* 69, *p.* 205. *Forwarding a statement showing the prevalence of cattle disease in the Banda District, and detailing the villages which have suffered.*
	Ditto ditto ...	751	16*th June* 1868 ...	*Reporting the outbreak of cattle disease in his district.*
	Ditto ditto ...	1006	7*th August* 1868 ...	*Selections, Government of India, No.* 69, *p.* 217. *Describing the symptoms of the diseases with which cattle were attacked during the late epidemic at Banda, and forwarding a memorandum of a post-mortem examination.*
	Officiating Collector of Banda	...	From 18th April 1870 to 12th January 1871.	21 Returns of cattle disease, p. 375.
Kirwee.	Assistant Collector of Kirwee	...	From 10th February 1870 to 20th June 1870.	5 Returns of cattle disease, p. 377.
Humeerpore.	*Collector of Humeerpore* ...	...	23*rd July* 1868 ..	*Selections, Government of India, No.* 69, *p.* 215. *States that cattle disease had appeared in Pergunnah Humeerpore.*
	F. Henvey, Esq., Junior Secretary to the Government of North-Western Provinces.	70A	13th January 1870	Forwarding correspondence regarding cattle plague in Humeerpore, p. 378.
	E. B. Thornhill, Esq., Collector of Humeerpore.	240	23rd July 1869 ...	Confidential report on the general condition of the district and prospects of the season, p. 378.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Humeerpore,—*continued.*	E. B. Thornhill, Esq., Collector of Humeerpore.	459	26th November 1869	States that small-pox (rinderpest) among cattle is always more or less prevalent in his district, p. 378.
	M. H. Court, Esq., Commissioner of Allahabad (forwarded by F. Henvey, Esq., Junior Secretary to the Government of North-Western Provinces, by his No. 145, dated 31st January 1870).	6	17th January 1870	Forwarding a statement from the Collector of Humeerpore, showing the mortality among the cattle during the late season of distress, with certain remarks, p. 379.
	Evidence of Gobra Thakoor	...	27th April 1870 ...	Evidence recorded by the Cattle Plague Commission in the Humeerpore District. p. 381.
	Ditto of Duleep Singh	...	Ditto ditto ...	p. 381.
	Ditto of Chundee ...	...	Ditto ditto ...	p. 382.
	Ditto of Muthura Nath Pursaud	...	28th ditto ...	p. 382.
	Ditto of Goyaram Thakoor.	...	Ditto ditto ...	p. 383.
	Ditto of Gunga Chamar and nine others.	...	Ditto ditto ...	p. 383.
	Ditto of Laljee Chamar	...	Ditto ditto ...	p. 383.
	Ditto of Nund Lall ...	...	29th ditto ...	p. 383.
	Ditto of villagers of Coocher.	...	Ditto ditto ...	p. 384.
	Ditto of villagers of Chundowkee.	...	Ditto ditto ...	p. 384.
Cawnpore.	*Collector of Cawnpore* ...	...	*23rd July* 1868 ...	*Selections, Government of India, No. 69, p. 214. States that cattle disease had not spread in an epidemic form in his district.*
	Villagers of Rampore ...	...	30th April 1870 ...	Evidence taken by the Cattle Plague Commission, p. 385.
	Ditto Lahoreemow...	...	Ditto ditto ...	
	Evidence of Sergeant Murphy.	...	2nd May 1870 ...	Ditto ditto at Cawnpore Station, p. 386.
	Ditto of Caseem Ally ..			
	Ditto of Buxoo Beparri, sirdar of bullocks.			
	Cawnpore, Goalaparah ...	..	Ditto ditto ...	Ditto ditto p. 386.
	Village Kakoorie ...	...	3rd May 1870 ...	Ditto ditto p. 387.
	,, Tatee ...			
	,, Baragow Tatea ...			
Futtehpore.	A. C. Barnard, Esq., Collector of Futtehpore.	...	5th June 1868 ...	Reporting upon the forms of cattle disease most common in the Banda and Kirwee subdivisions, p 388.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Futtehpore,—*continued.*	*Collector of Futtehpore* ...	537	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 214. *States that no cattle disease existed at Futtehpore in* 1868.
	Villagers of Soobedarpore...	...	21st May 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 389.
	Ditto of Narainpore ...			
	Ditto of Goneshpore ...	...	23rd May 1870 ...	
	Ditto of Motheapore ...			
	Ditto of Cheetisapore ...	...	25th May 1870 ...	
	W. C. Turner, Esq., Collector of Futtehpore.	79	27th April 1870 ...	Forwarding the Commission's form No. 1 filled in, p. 393.
	A. C. Tupp, Esq., Officiating Collector of Futtehpore.	304	23rd August 1870...	Forwarding a report from the Tehsildar of Ekdulla, stating that cattle disease had broken out in a few villages, and that 140 cattle had died, p. 393.
Jounpore.	*Collector of Jounpore* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 215. *States that there was no cattle disease in Jounpore in* 1868.
Allahabad.	*Collector of Allahabad* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 215. *States that cattle disease prevailed in the Allahabad District in the spring of* 1868.
	J C Robertson, Esq., Officiating Magistrate of Allahabad.	661	23rd August 1870...	Reports the outbreak of cattle disease in Pergunnahs Cheyul and Munjunpore, p. 394.
	Ditto ditto ...	670	26*th August* 1870...	*Forwarding report from a Native Doctor relative to cattle disease.*
	Ditto ditto ...	692	1st September1870..	Reporting disease at Allahabad and Kurrah, p. 394.
	R. Yeatman, Esq., Assistant Superintendent of Police.	...	3rd September 1870	Report regarding cattle disease at Munjunpore, p. 394.
	J. C. Robertson, Esq., Officiating Magistrate of Allahabad.	717	7*th September* 1870..	*Forwarding Native Doctor's 2nd report.*
	Ditto ditto ...	787	6*th October* 1870 ...	*Forwarding detailed replies to the Commission's Form No.* 1, *with reference to the outbreak of disease in Pergunnah Kurrah.*

HISTORICAL SKETCH.

The earliest written record of cattle disease in this Division concerns an outbreak in the District of Banda in the year 1868; but the oral testimony of the inhabitants of Humeerpore, Cawnpore, and Futtehpore, obtained by the Commission, is to the same effect here as elsewhere, namely, that murrain has always prevailed from time beyond memory. The Banda disease broke out in February. The Collector, Mr. M. Sandys, reports in May that 1,310 head of cattle had died. The disease broke out in Pergunnah Tirohan, but it spread widely over the district.

1868.

In one mouzah of the Banda Pergunnah, 48 recoveries out of 62 cases are reported. In a later communication (16th of June), the mortality is put down at 2,461 out of 5,035 attacked—48·8 per cent. The disease was said to have been imported from Independent States adjoining the district; but the Collector points out that this could not be true of the Tirohan and three other pergunnahs. Strict injunctions had been issued to isolate all diseased animals and prevent communication. The disease was declining.

Mr. Sandys writes again in August. He describes the symptoms of the murrain thus:—"At first languor, refusing to take food or water, prostration and fever; then, on the 3rd or 4th day, liquid and bloody stools, which continue with greater frequency till the death of the animal—generally on or about the seventh day." Sometimes the fatal issue was more rapid. No successful treatment was known, the natives giving split gram soaked in water. Mr. Sandys writes:—"Since the outbreak the disease has appeared in 99 villages in this district. The total number of cattle attacked has been 6,536, and total number of deaths 3,365; nearly 50 per cent. therefore have recovered."

He also describes *khoorah*, foot and mouth disease, which prevailed consentaneously. A memorandum by Dr. Ringer is appended, in which sulphur fumigation is recommended. Dr. Ringer had performed a *post-mortem* examination, and found the intestinal mucous membranes much congested.

The replies forwarded by Collectors to the Board of Revenue's Circular No. B show that no disease was known to exist in the Districts of Jounpore, Futtehpore, and Cawnpore. From Banda the information above summarised is given. Cattle disease prevailed in Pergunnah Barrali of the Allahabad District and its neighbourhood; up to 29th April 1868, 368 cattle had died. The symptoms described are—"loss of appetite, discharge from mouth and nose, and eruptions." Segregation was recommended. In the Humeerpore District a disease similar to the Hurdui disease had broken out, but the mortality was not great.

The year 1869 was one of great drought and scarcity of fodder in the North-Western Provinces. A very great number of cattle died in the Allahabad Division from this cause alone; but in the Districts of Humeerpore and Jounpore disease also prevailed, and carried off the impoverished cattle in great numbers. The evidence regarding it is stronger in the Humeerpore District than in the other. The Collector, Mr. E. B. Thornhill, gives a good account of the murrain in reply to questions propounded by the Government of the North-Western Provinces. He states that the disease is always present in the district, but more prevalent in some years than others. In 1869 it commenced towards the end of the cold weather and continued into the rains. It spread all over the district. The mortality is put down at 15,598, and the symptoms are well described.

1869.

The evidence collected by the Commission on the occasion of their visit to Humeerpore in April 1870 confirms this account of the disease in every particular. The Collector of Humeerpore subsequently forwarded to Government a careful return of mortality, which, with the Commissioner's comment, is printed below.

HISTORICAL SKETCH.

The mortality among cattle in the Jounpore District was undoubtedly very great, and was mainly attributed to poisoning; but there can be little doubt that both starvation and disease had much to do with it. A good summary of facts concerning loss of cattle in this district is given in Mr. Crosthwaite's letter printed at page 362, and much more will be found in Appendix No. 4. Banda appears to have been free from disease during 1869.

1870.

During the year 1870, however, both rinderpest (*chechuck* or *bhowanee*) and foot and mouth disease (*khoorah*) appear to have prevailed throughout the district. These diseases prevailed also in the Sub-division of Kirwee. The mortality is put down in the District of Banda at 583, and in Kirwee at 198. The facts communicated from time to time regarding the prevalence of the disease are summarised at page 375.

The District of Humeerpore was visited by the Commission towards the end of April, and much valuable evidence was obtained regarding the past outbreaks; but, notwithstanding a searching inquiry, no cases of rinderpest could be found in the neighbourhood of the station. Foot and mouth disease prevailed there at the time, and rinderpest was said to exist in the western part of the district. In the town of Cawnpore also, and its vicinity, careful inquiries were made as to the present and past existence of murrains. Foot and mouth disease was found to prevail among the Government cattle. The people were familiar enough with the usual diseases of cattle, but no exact information regarding recent or present disease could be obtained.

From Futtehpore, reports of an outbreak of disease early in March were received in May. The district was visited on the 21st of this month and many cases of rinderpest—*debee*—were seen, and evidence recorded showing that the disease was no new one in the district. Subsequently, a report of a severe outbreak of disease in the Ekdulla Pergunnah of this District was received in September. The disease had broken out in July and lasted till the middle of August; mortality 140. The symptoms recorded are so vague as to leave some doubt as to what the nature of this disease was.

The Commission also visited the Jounpore district early in June, in order to investigate the system of cattle poisoning said to be rife there. Inquiries were also made with regard to disease, and the usual information was obtained—that rinderpest and foot and mouth disease were well known, and visited the district periodically: no case of either was found, though they were carefully sought for.

In August, a report of the prevalence of murrain in the Poor and Munjunpore Mouzahs of Pergunnah Cheyul of the Allahabad District was received. A Native Doctor was deputed to investigate the nature of the disease. Subsequently, disease was ascertained to exist in the Kurrah Pergunnah, and on the 1st of September some cases were reported to have occurred in the Station of Allahabad. It appears from the reports received that both foot and mouth disease and rinderpest prevailed simultaneously. The report of the Native Doctor refers unmistakably to the latter, while the Police Officer who investigated the disease describes the former. The last report from this district is dated 6th October. The disease was still going on; but from the fact of no subsequent reports having being received, it is inferred that it died out or continued to prevail mildly.

Summary of Returns received from the Banda District, showing the sickness and mortality among Cattle during the Months of April to December 1870.

Pergunnah.	Mouzah or Village.	Date of outbreak.	Date of return.	Village Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
			I.—From *Khoorah* or Hoof Disease.						
Banda ...	Mohunpoora ...	1st April 1870 ...	18th April 1870 ...	1,425	16	.....	10	6	The symptoms assigned to these diseases are those usually given. The figures give the following results:—
	Hurdoulee	„ „ ...	... ...	500	1	.....	1	.....	
	Bhowanipoorwa ...	„ „ ...	... ...	1,900	9	.....	9	.....	
	Sara Kapoorwa ...	„ „ ...	... ...	2,000	30	.....	30	.....	
	Tumorah	„ „ ...	... ...	800	12	.....	12	.....	
	Sohana	8th „ „ ...	27th April 1870 ...	300	72	.....	42	30	*Khoorah.*
	Mowaie	16th „ „ ...	„ ...	400	8	.....	4	4	Attacked per cent. of stock 5·7.
	Kool Khoomaree ...	1st May „ ...	... ...	300	16	.....	16	.....	Died per cent. of stock 1·12.
	Bandapoorwa ...	15th „ „ ...	... ...	350	37	.....	37	.....	Died per cent. of attacked 19·39.
	Samba	7th „ „ ...	... ...	600	42	.....	42	.....	*Bhowanee.*
	Dingbie	17th „ „ ...	... ...	600	85	.....	85	.....	Attacked per cent. of stock 7·24.
Tirohan ...	Mangawan	5th October „ ...	7th November 1870 ...	106	6	.....	6	.....	Died per cent. of stock 3·48.
	Tickuria	„ „ ...	„ „ ...	552	8	.....	8	.....	Died per cent. of attacked 48·14.
	Markoondee	13th „ „ ...	„ „ ...	212	12	.....	12	.....	The number still ill is excluded.
	Bherah	11th „ „ ...	„ „ ...	140	7	.....	7	.....	Some of the entries under *khoorah* are very doubtful, the mortality assigned being excessive.
	Bumbeea	11th „ „ ...	„ „ ...	340	15	.....	15	.....	
	Sapahaha	10th „ „ ...	„ „ ...	60	40	8	33	.....	
	Rampore Kullyanghur ...	15th „ „ ...	„ „ ...	450	11	.....	11	.....	
	Kullyanpore ...	19th „ „ ...	„ „ ...	750	15	7	8	.....	
	Bugdree	12th „ „ ...	„ „ ...	200	4	.....	4	.....	
	Nagur	15th „ „ ...	„ „ ...	300	3	.....	3	.....	
	Chundermara ...	2nd November 1870 ...	25th „ „ ...	550	75	15	60	.....	
	Rampoorja	„ „ ...	„ „ ...	125	60	16	44	.....	
	Choolee	„ „ ...	„ „ ...	125	50	10	40	.....	
Duesenda ...	Gouhanee Kullan ...	11th December „ ...	10th January 1871 ...	279	15	.....	15	.....	
	Durhaee	15th November „ ...	„ „ ...	100	20	.....	20	.....	
Chilloo ...	... ...	15th December „ ...	„ „ ...	523	9	5	4	.....	
Tirohan ...	Suraijan	4th „ „ ...	12th „ „ ...	125	48	24	24	.....	
	Hunnooa	5th „ „ ...	„ „ ...	537	100	75	25	.....	
	Gurhawara	15th „ „ ...	„ „ ...	110	20	4	16	.....	
	Unayee	16th „ „ ...	„ „ ...	110	15	3	12	.....	
	Bana								
			Total ...	14,869	861	167	654	40	

Summary of Returns received from the Banda District, showing the sickness and mortality among Cattle during the Months of April to December 1870,—continued.

PERGUNNAH.	Mouzah or Village.	Date of outbreak.	Date of return.	Village Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
			II.—Pox or *Bhowanee* or *Chechuck*—*Rinderpest.*						
TIROHAN ...	Kobrah	19th April 1870 ...	... ...	100	43	18	4	21	
OUGASEE ...	Keean	28th „ ...	13th May 1870 ...	1,750	203	40	89	74	
	Pursaulie	30th „ ...	... ...	2,700	20	7	13		
	Puthwa	4th July 1870 ...	... ...	2,000	35	35			
	Anousa	25th „ ...	... ...	1,200	40	25	15		
	Pudree	„ „ ...	... ...	450	15	7	8		
	Bagheta	„ „ ...	... ..	700	20	12	8		
	Ragowlee	... ...	... ..	750	25	13	12		
SOONDA ...	Nehalpore	6th September 1870 ...	24th September 1870 ...	174	100	29	71		
	Goojakullan ...	2nd October „ ...	2nd November „ ...	161	68	39	24	5	
	Moorkha	1st „ „ ...	„ „ „ ...	700	90	56	34		
	Olehrey	1st „ „ ...	„ „ „ ...	200	31	21	10		
	Purdawan	15th „ „ ...	„ „ „ ...	500	54	34	10	10	
	Bameepore	14th „ „ ...	29th November 1870 ...	200	43	28	15		
PYLANEE ...	Garountee	15th „ „ ...	... ...	342	77	52	25		
			TOTAL ...	11,927	864	416	338	110	
			GRAND TOTAL ...	26,796	1,725	583	992	150	

Summary of Returns received from the Kirwee Sub-division of the Banda District.

Pergunnah.	Village.	Date of outbreak.	Date of return.	Village Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
			I.—*Debee* or *Small-pox—Rinderpest.*						
Dubsenda ...	Entowah	7th January 1870 ...	10th February 1870 ...	363	64	43	21	.....	The symptoms assigned are those usually given. The results are as follows:— *Debee.* Attacked per cent. of stock 12·96. Died per cent. of stock 7·33. Died per cent. of attacked 56·57. *Khoorah.* Attacked per cent. of stock 5.
Chilao ...	Mhow	25th „ ...	1st March 1870 ...	1,222	120	61	44	15	
	Gurhua	21st February 1870 ...	9th May 1870 ...	365	38	28	10		
Burgurh ...	... ...	20th „ ...	„ „ ...	465	112	59	53		
Tirohan ...	Amdarghaina ...	15th June 1870 ...	20th June 1870 ...	125	4	3	1		
	Amanpore	„ „ ...	„ „ ...	60	7	3	4		
	Rampore	3rd „ ...	„ „ ...	100	5	1	4		
			Total ...	2,700	350	198	137	15	
			II.—*Khoorah, or Foot and Mouth Disease.*						
Khord ...	... ...	16th April 1870 ...	5th May 1870 ...	400	20	.....	12	8	
			Total ...	400	20	.....	12	8	
			Grand Total ...	3,100	370	198	140	23	

DISTRICT OF HUMEERPORE.

HUMEERPORE. F. Henvey, Esq. *From* F. HENVEY, Esq., *Officiating Secretary to the Government of the North-Western Provinces, to* J. H. B. HALLEN, Esq., *Staff Veterinary Surgeon, Bombay Army, and President of the Commission of Inquiry into Cattle Diseases in India,*—(*No.* 70 *A., dated Camp Bhudrolee, the* 13*th January* 1870).

In continuation of this office letter No. 35 A, dated the 7th ultimo, I am directed to forward, for the information of the Commission, copies of the documents, as noted in the margin, regarding recent outbreaks of disease among cattle in the District of Humeerpore.

From the Officiating Collector of Humeerpore, docket No. 240, dated 23rd July 1869, with enclosure.
To the Officiating Collector of Humeerpore, No. 453 A, dated the 3rd August 1869.
From the Officiating Collector of Humeerpore, No. 459, dated the 26th ultimo.

E. B. Thornhill, Esq. *From* E. B. THORNHILL, Esq., *Officiating Collector, Humeerpore, to the Secretary to Government, North-Western Provinces,*—(*No.* 240, *dated Humeerpore,* 23*rd July* 1869).

CONFIDENTIAL REPORT.

Has the honor to submit the above for the week ending 23rd July 1869.

General condition and prospects of the season.

The people seem to be in good heart, notwithstanding prices not having fallen. There has been great mortality among the cattle from small-pox, and also apparently from gripes and surfeit. The cattle were feeding on leaves before the rain fell, and were in many places in a starving and weak condition, and the change in the weather, and the change of food as soon as the grass began to spring up, seem to have been very disastrous to them.

F. Henvey, Esq. *From* F. HENVEY, Esq., *Officiating Junior Secretary to the Government of the North-Western Provinces, to* E. B. THORNHILL, Esq., *Officiating Collector of Humeerpore,*—(*No.* 453 *A, dated Nynee Tal, the* 3*rd August* 1869).

With reference to your confidential report for the week ending the 23rd ultimo, I am directed to request that you will submit information on the following points in connection with the mortality among the cattle from small-pox, *viz.*—

1*st.*—Where the disease came from.
2*nd.*—Where it first made its appearance.
3*rd.*—Where it extended to.
4*th.*—How long it lasted.
5*th.*—The mortality.
6*th.*—The symptoms observed and remedies tried.

E. B. Thornhill, Esq. *From* E. B. THORNHILL, Esq., *Officiating Collector of Humeerpore, to* F. HENVEY, Esq., *Officiating Junior Secretary to the Government of the North-Western Provinces,*—(*No.* 459, *dated the* 26*th December* 1869).

In reply to your letter No. 453 A, dated 3rd August 1869, I have the honor to report as follows:—

1*st.*—The disease is always present in the district. In some years very few cattle are attacked, and very few fatal cases occur; in others it spreads widely.

2*nd.*—Being, as said before, present always to a small extent in various parts of the district, it appears to have increased and become virulent in the cold weather, as the fodder became scarce.

3*rd.*—It was present, to a greater or less extent, in every pergunnah of the district.

4*th.*—It lasted in the south of the district until the rains set in, but in the northern pergunnahs, *viz.*, Humeerpore, Mondha, Jellalpore, and part of Rath, it did not cease entirely.

5*th.*—The mortality was as follows:—

Humeerpore	1,188
Soomairpore	2,247
Mondha	4,962
Jelalpore	5,620
Rath	607
Mohoba	643
Pumwaree	24
Jeitpore	7
TOTAL ...	15,598

HUMEERPORE.
E. B. Thornhill, Esq.

6th.—The symptoms are,—the passing of red, apparently bloody, fæces, the absence of appetite for solid food, with a strong craving for drink, and in some cases pustules appear on the lips. After death, sores are found on the inner surface of the skin, but the pustules do not appear on its outer surface. The treatment is simply seclusion of the affected animal, with a plentiful supply of water, and if it desires solid food, gram soaked in water is given. The disease usually terminates either fatally or by recovery within a week. Usually, the great majority of animals recover, but this year, being weakened by insufficient food, the majority attacked died.

F. Henvey, Esq.

Office Memorandum by F. HENVEY, Esq., *Secretary to the Government, North-Western Provinces,* —(*No.* 145 *A, dated Camp Muttra, the* 31*st January* 1870).

The undersigned is directed to forward to the President of the Cattle Commission copy of a letter, with its enclosures, from the Commissioner of Allahabad, No. 6, dated 17th instant, regarding recent mortality amongst cattle in the Humeerpore District.

M. H. Court, Esq.

From M. H. COURT, Esq., *Commissioner of Allahabad Division, to* R. SIMPSON, Esq., *Secretary to the Government, North-Western Provinces,*—(*No.* 6, *dated* 17*th January* 1870).

I have the honor to acknowledge the receipt of your letter No. 634 A (Revenue Department), dated 23rd August, and to submit, in original, docket from Collector, Humeerpore, No. 12, dated 7th instant, with a statement showing actual mortality amongst cattle in the District of Humeerpore during the season of distress, which is from May to September inclusive.

2. It will be seen that the mortality has been chiefly owing to "starvation:" by this word it is not to be taken that the cattle died from real starvation. They were reduced to great debility and exhaustion for want of food, and on the first heavy fall of rain, they floundered in the black cotton soil and were physically unable to recover themselves. Small-pox was most prevalent in the northern pergunnahs, where (Julalpore excepted) there was less distress amongst the human population.

3. Throughout Bundelkhund there was want of fodder for cattle in the best pergunnahs, but in those where there was only partial failure, there was debility, which undoubtedly encouraged disease.

4. Julalpore and Momdhah Pergunnahs adjoin, and are in the same geographical latitude. The former pergunnah is dry, and distress prevailed in the western portions. The latter pergunnah is composed almost entirely of black soil, and famine was less felt than in any other pergunnah.

5. It will be seen that deaths from small-pox are nearly in same proportion, but in mortality "from starvation" there is great disproportion, *viz.*—

PERGUNNAHS.	Total number of cattle, plough and others.	DEATHS.	
		Starvation.	Small-pox.
Julalpore	1,00,739	11,437	5,620
Momdhah	68,563	798	4,962

Taking, as I am informed, the average life of horned cattle to extend to sixteen years, the mortality in Humeerpore has been nearly treble the ordinary rates, and it can be reasonably assumed that amongst those returned under "starvation" will be nearly all those which under any circumstances would have dropped away from age.

G. Adams, Esq.

From G. ADAMS, Esq., *Officiating Deputy Collector, in charge of the Collector's Office, Humeerpore, Revenue Department, to the Commissioner, 4th Division, Allahabad,*—(*No.* 12, *dated* 7*th January* 1870).

In answer to his docket No. 184, dated 8th September last, has the honor to submit a statement showing the entire loss of cattle from various causes in the Humeerpore District during the season of distress.

HUMEERPORE.
G. Adams, Esq.

Statement showing the mortality among Cattle during the scarcity in the District of Humeerpore.

PERGUNNAHS.	Area of the Pergunnah in square British statute miles.	No. of villages.			No. of cattle in existence before the scarcity.		Mortality during the scarcity.		Number survived.		Percentage of cattle died to head of cattle alive before the scarcity.		Causes of Mortality.								
		Inhabited.	Uninhabited.	Total.	Cattle of all kinds.	Plough cattle.	Cattle of all kinds.	Plough cattle.	Cattle of all kinds.	Plough cattle.	Cattle of all kinds.	Plough cattle.	Starvation.	Small-pox.	Sore hoof.	Lurhs.	Putka.	Mooree.	Bhowra.	Ghaut.	Eyebac.	Billaree.	Other causes.
Humeerpore	126·92	47	6	53	27,975	8,289	3,275	870	24,700	7,419	11·75	10·49	1,449	1,188	262	8	...	20	...	2	2	...	346
Sooniairpore	240·60	69	10	79	54,477	19,092	5,291	1,641	49,186	17,451	9·75	8·50	3,044	2,247	...	...	...	...	...	...	...	...	...
Mondha	231·99	81	14	95	50,049	18,514	6,040	2,052	44,009	16,462	13·86	11·08	798	4,962	22	...	257	...	...	...	...	...	1
Jelalpore	420·51	90	40	130	74,374	26,365	17,057	4,193	57,317	22,172	22·93	15·90	11,437	5,620	...	...	...	...	...	...	...	...	...
Raat	381·93	134	33	167	59,954	27,423	14,077	4,115	45,877	23,308	23·46	15·00	12,851	907	8	195	22	1	...	...	...	...	93
Mahoba	329·16	92	7	99	66,242	19,017	13,812	1,917	52,430	17,100	20·83	10·09	12,682	643	487	...	...	...	...	...	...	...	...
Punwaree	411·88	183	48	231	75,369	28,210	16,931	4,940	58,438	23,270	22·46	17·51	16,819	24	4	...	...	2	3	...	...	1	78
Jeitpore	145·51	48	6	54	27,378	7,606	8,852	1,398	18,526	6,208	32·32	18·38	8,832	7	2	...	...	...	...	...	...	...	11
TOTAL ...	2,288·50	744	164	908	4,35,818	1,54,516	85,335	21,126	3,50,483	1,33,390	19·56	13·67	7,912	15,598	785	203	279	23	3	2	2	1	529

Evidence of GOBRA THAKOOR, *inhabitant of the village of Rameree, Station Humeerpore, distant from Humeerpore Station ¼ mile in a south-easterly direction,—dated Humeerpore, the 27th April* 1870. HUMEERPORE Gobra Thakoor.

The village contains about 800 houses and about 2,000 head of cattle; these cattle are used for ploughing, taking home the corn and threshing. There are about an equal number of bullocks and cows, of which 400 or 500 are milch cattle. Cattle are generally bought at the Gujneer hât in the Cawnpore District, and at Burwa Bazaar, about 4 miles hence in the Humeerpore District. No *beparies* ever come to purchase our cattle. Stock. Cattle trade.

The disease called *bhawanee* has been raging in my village and the surrounding villages for the last 2 years. There was an attack of this disease about 10 years ago. The disease has appeared in my village about 5 times during my lifetime. I am about 60 years old. The disease is carried by the wind from village to village. I can't say where it breaks out originally. It broke out in my village on one occasion about 10 years ago, and afterwards affected surrounding villages. Last year it broke out in the village of Kurara, and then affected Seloka and other villages. *Bhawanee.* History. 1869.

It generally comes from the west. I lost four head of cattle last year, namely, one buffalo, two bullocks, and one cow. About 200 or 250 died in the village. I had 10 bullocks, 4 cows, and 2 buffaloes before the disease broke out; 4 bullocks had the disease and recovered. The symptoms of *bhawanee* are as follows:—off feed, thirst, discharge of blood from the rectum, and sometimes mouth. The animal can't swallow; breath offensive; discharge from nose and eyes, sometimes blood from nose; ears droop; hair standing; has not observed any eruptions on the body. The disease is also called *debee, matah,* and *sitlah.* Duration of the disease 2½ to 3 days in fatal cases. The bloody purging comes on at the same time that the animal begins to lie down; but it has been off feed for two or three days previously. The mouth gets very hot and full of sores ("gets rotten"); the blood from the mouth comes away with the saliva. When the animal is very ill, it lies down on its side, and then the discharge of blood is worse. Has seen some animals much weakened by the disease; have their eyes affected, they become white. Among 20 animals affected, in some years 10 will die, in some 5, and so on. Source. Mortality. Symptoms.

The disease varies in virulence in different years. This disease is no new disease; I have heard of its existence from my forefathers. The price of cattle has increased from Rs. 15 or 20 a head to Rs. 30 or 40; the cause of this is that the number of animals has been diminished by deaths from disease. Land has never lain fallow in my village, because the quantity of land attached to it is so small; but in many neighbouring large villages, such as Kanota, Patara, Talokur, Kusmura, &c., land has remained uncultivated on account of deaths from cattle disease. Varying type. Price of cattle. Effect on cultivation.

When a man loses all his cattle he is obliged to borrow money from the Bhowras to purchase cattle, or gives his land to sub-tenants for tillage (underlets it): this system is called *kutkanedar.*

When an animal dies the chamars take possession of the carcass for the hide. They give two pairs of shoes for each bullock and buffalo, and one pair for a cow, to the owner; they make shoes, well buckets (*pur*), covers for *bahils, ruts* and gharries. [Note.—*Bahils* are native carriages; *rut* is another kind of native carriage.] They also make *ropes* of hides. There is no export of hides to Cawnpore, but they are sold in the neighbouring hâts; sometimes men come from the neighbouring villages to purchase hides. There are sheep and goats in our village. This disease was very destructive among these animals. There has been no death from *bhawanee* for the last 6 months; the disease is infectious. If one animal gets ill, all the cattle in the homestead take the disease. Cattle don't have the disease a second time, as a rule; one of my own cattle had a second attack 8 or 10 months after the first. The first attack was the more severe; in the second attack it was fit for work again in three days. Disposal of carcasses. Hides. Sheep and goats. Infectiousness. Second attack.

Foot and mouth disease (*khurphutta*) is prevailing in my village now, and has prevailed for the last 2 months; deaths from this disease are very rare. In this disease maggots are very prone to form in the hoofs, and the best treatment is to make cattle stand in soft mud. Foot & mouth disease.

The disease (*bhawanee*) prevails in May, June, and July. Season.

No poisoning of cattle occurs in my village, and I have not heard of this practice. Poisoning.

Evidence of DULEEP SINGH, *an inhabitant of Rameree, aged* 70 *years, landholder,—dated Humeerpore, the 27th April* 1870. Duleep Singh.

Is owner of little less than half the village, containing 9,000 beegahs of land, being the proprietor of three-eighth part of the village. There are about 1,000 houses in the village and nearly 2,000 head of cattle, of which about 250 are bullocks, the same number of buffaloes, and the rest are cows. Has seen the disease *bhawanee* 12 or 13 times in his life. The Stock. *Bhawanee.*

HUMEERPORE. History. 1869. Mortality. Infection. Symptoms.

disease varies in severity, sometimes sweeping away all the cattle of the village, and sometimes causing a slight mortality. The disease prevailed last year and killed 5 to 800 head of cattle. I lost 20 out of 40. The disease appeared in my village when I was only 12 years old. I heard it spoken of by my father, that it was an old disease; *bhawanee* is the most fatal of all diseases that attack cattle, and is not amenable to any treatment; we give no medicines, but we do *poojah* and give the water in which gram had been soaked. People consider the disease to be infectious, and that it comes from the west, travelling from one village to another. The symptoms of *bhawanee* are,—off feed, purging blood, discharge from eyes and nose; the animal salivates from the mouth at the time of death, and inside of the mouth there are sores, as if the skin had been taken off. No eruptions have been observed; there is difficulty of breathing in the last stage and slight cough. The animal dies in from 5 to 15 days.

Chundee.

Evidence of CHUNDEE, *45 years old, milkman, an inhabitant of Humeerpore,—dated Humeerpore, the 27th April* 1870.

Debee in 1869. Mortality. Names. Symptoms. Sheep, goats, and buffaloes

Is a milkman by profession, and owns 13 cows and 1 buffalo. I lost 7 of *debee* last year in the month of April. Of the number I now have, 3 had the disease, but they recovered; the rest of the flock had not the disease. During the outbreak last year, the village lost about 80 out of 250 head of cattle. The disease is called *bhawanee, debee, matah,* and *sitlah* by the Hindoos, and *chechuck* by the Mahomedans. The symptoms of the disease are,—running from eyes and nose, but not from mouth, purging blood and mucus, shivering; the gums and inside the cheeks become abraded; the purging commencing from the 2nd or 3rd day of the disease. There are no eruptions on the skin. This is the most severe malady that attacks cattle; sheep, goats, and buffaloes also got *debee.*

Muthura Nauth Pursaud.

Evidence of MUTHURA NAUTH PURSAUD, *Brahmin, Zemindar of village Rameree, Station and District Humeerpore,—dated Humeerpore, the 28th April* 1870.

Situation. Origin of disease.

My village is situated on the banks of the river Betwunti, through which the high road of this station passes. Cattle and conveyances pass along this road from Cawnpore town and district on the north, and from Nowgong, Chutturpore Raj, Raat, Punwali, Mahowba, &c., on the south and south-west. Thus I believe, if any of the cattle, bullocks, or buffaloes in carts or carrying packs happen to be sick, the disease (*matah*) is imported into my village.

History. Mortality Scarcity. Names.

This disease has occurred 7 or 8 times in my lifetime, recurring every third or fourth year. The disease is not constantly present. When it comes, it continues from 1½ to 2 or 3 months. After it has prevailed for some time, the villagers perform *poojah,* which drives off the disease and sends it to another village. The disease varies in virulence in different years. The last attack was a very severe one, and few cattle attacked recovered. When the disease is very mild, 10 to 15 per cent. of attacked only die. During the last attack there was a great scarcity of provender, and the animals were very weak from starvation, and readily succumbed to the disease. This disease is called *debee, matah, sitlah,* and *bhawanee.* I lost one buffalo. The symptoms which I observed were as follows:—

Symptoms. Treatment of cattle. Housing. Feeding. Agriculture.

The first indication of disease was that the animal did not graze. Next day there was offensive purging. Next day water in which gram had been soaked was offered, but the animal did not swallow it, and it came back through the nostrils. There were discharges from the mouth and nostrils, and watering of the eyes. Blood used to fall in drops from the rectum after the purging. It died on the fourth day. Cattle used for agricultural purposes are worked from morning till noon. They are then turned out to graze if there is grass on the fields; if not, they are fed on castor-oil leaves and *boossee.* They are housed at night in sheds in the cold weather, and in the hot weather they are tied up in yards. In the cold weather they are fed on cotton seeds and get half a seer each, and in the hot weather they get about the same quantity of gram or oil-cake. Agriculture commences in July and continues till August for the *khureef* crops, namely, *oorud, urhur, moongh, moat,* flax, *jowar, bajra,* and *til.* The cultivation of the *rubbee* crops, namely, wheat, grain, peas, barley, linseed, oats, &c, commences in October and continues for about a month. The system of agriculture and treatment of cattle which I have described is that which generally prevails all over this district. During the rest of the year some of the cattle do no work, but many of the cattle are used for gharry and pack work.

Cattle driven to a distance. Bulls.

When provender is very scarce in this district cattle are sent to graze on the lands of relatives at a distance, where provender may be more abundant. They are sent to Gurdaha, about 30 miles hence, Waltara 21 miles, Deogong 6 miles, and other places. The cattle of adjoining villages meet and associate on grazing grounds. There are three bulls in my village. Cattle are taken to the best bulls in the village to be served, but other bulls may get loose and serve cows. The bulls belong to this district (of the district breed).

I possessed 11 head of cattle and 6 buffaloes at the time that I lost the buffaloes of *matah*. Only one calf besides had the disease; this animal died. When I found that the buffalo and calf were sick, I did not allow the rest of my cattle to be brought home, and kept them away for a month and three quarters in the fields. HUMEERPORE. Segregation.

Evidence of GOYARAM THAKOOR, *of Moniejar, 15 miles to the south of Humeerpore, aged 65 years, and a landholder by profession,—dated Humeerpore, the 28th April* 1870. Goyaram Thakoor.

There are 265 houses in this village and about 1,000 head of cattle, of which about 600 are bullocks and the rest cows and buffaloes. Last year during the summer months there was disease, called *matah* or *bhawanee*, in the village, and it killed somewhere about 400 or 500 head of cattle. During deponent's life there was the same disease 5 times. The first outbreak was observed 30 years ago. It was as severe as the outbreak last year. Last year the disease at first appeared in the village of Bijookhur, 3 miles to the east of Moniejar. It then travelled to Bundey, 1½ mile to the south, whence it came to this village. From the deponent's village it went to a place called Nadpara, 3 miles to the north-east. Deponent did not lose, any cattle during the last outbreak, but he had opportunities of seeing the disease. The symptoms are,—discharge from eyes, mouth, and nose, no eruptions on the skin, and purging blood and mucus. When discharge from the mouth, is very great, the animal does not eat and drink, and when it tries to drink the water returns by the nostrils. Considers the disease to be contagious. The village is not situated near the high road. The cattle of witness's village and those of other neighbouring villages graze together in the fields. There is a pasture containing 250 to 300 beegahs belonging to the village. The names of the different sorts of grass on the grazing field are *mosail, bhore,* and *tigra* (*mosail* being another name of *dhoob*). The number of cattle in the village has diminished from before, inasmuch as a large number of them died last year. Witness had 4 bullocks, 2 cows, and 1 buffalo at the time the disease appeared last year. Did not let the cattle out of the house for fear of their catching the disease by contagion; did not even take them out for watering. No other men adopted the same precaution, and consequently they lost all or nearly all their cattle. Stock. *Bhawanee* in 1869. Mortality. History. Source of disease. Progress. Symptoms. Pasture. Segregation.

Evidence of GUNGA CHAMAR, *a resident of Hingota,—dated Humeerpore, the 28th April* 1870. Gunga Chamar.

I know the disease called *matah;* and I have had opportunities of opening the carcasses of cattle that have died of this disease, and I found that in the stomach, which looks like a network, there are blisters here and there, about the size of an oat or barleycorn, and that the bowels are gone bad; they look dark-red and black, and in some cases fatty-like deposits are found in the inner surface of the bowels. *Matah.* Internal appearances.

[Nine other chamars, deposed to the same effect.]

Evidence of LALJEE CHAMAR *of Rameree, aged 50,—dated Humeerpore, the 28th April* 1870. Laljee Chamar.

I skin the cattle which die in this village for the sake of the flesh, the owner taking the hide. We eat the flesh, and the owner gives us the hide to tan, and gets two pairs of shoes made of it. The hides of animals which die of *matah* disease are weaker than others, and often have very small holes in them. We find this after they are prepared and cleaned. When a man loses a great number of cattle, he takes as many shoes as he requires, and considers himself entitled to more when he wants them. When we have an excess of hides, we sell them to chamars from the other side of the river Jumna. Have never seen any chamar coming from Cawnpore to purchase hides. Our method of preparing hides is as follows:—The hide is soaked for 8 or 9 days in lime-water; three seers of lime are put in the water; we then take *babool* bark and put it in water with the hide: 20 seers of bark are used for one hide. The skin is made into a bag, filled with water and bark and hung up. It is left hung up for 3 days, and the water is changed daily. When I open animals that have died of *matah,* I find the intestines red, the inside of the intestines bloody, and patches of fatty-looking stuff on it. I have seen bubbles in the lungs. The *halali* hides (hides of slaughtered animals) are bought by *beparies* from Cawnpore and elsewhere. Under the term *bepari* I include chamars who purchase hides. Flesh of diseased cattle eaten. Hides. Curing hides. *Post-mortem* appearances.

Evidence of NUND LALL *of Pathara, distance 9 miles south-west of Humeerpore, aged 52 years,—dated Humeerpore, the 29th April* 1870. Nund Lall.

There are about 200 families in my village and 900 or 1,000 head of cattle. Last year there was *matah* in my village; it came from the west; there are about 300 bullocks, 200 buffaloes, and the rest cows. We lost from 60 to 80 head of cattle in the village from *matah;* 5 or 6 died out of 20 attacked. I have seen the disease in my village somewhere about 5 times; it appears after an interval of 5 or 6 years. About 37 years ago Stock. Mortality. History.

HUMEERPORE. 1869.

the attack was more severe than on other occasions. On that occasion the disease travelled from Loobeepore, Nowada, and Devar, villages situated to the south of Pathara. Last year most of the animals died from starvation. The animals that died of starvation

Symptoms of starvation and of *matah*.

gradually became very weak, and at last could not rise, and died; they showed no symptoms of disease. Those which died from *matah* had discharge from nose and mouth, offensive purging, more or less blood, no eruptions on the skin, blisters and sores inside the mouth,

Foot and mouth disease.

and no sores about the feet. There is a different disease in which the feet are sore and in which they suffer much pain, but do not die. This malady is called *khoorfoota*. I have had experience of *matah* and *khoorfoota*, but of no other sickness; 30 or 40 died of starvation. Those who had lost all their cattle either relinquished their lands or purchased

Effect on cultivation.

fresh bullocks with borrowed capital. A man named Huth lost 15 head of cattle, and has only 2 calves left. Another man, named Bhowanie, had only 4 left out of 15. These were the principal sufferers. Others lost 2 and 4 head of cattle each. One Luchman Thakoor's cattle, four in number, entirely escaped the disease. They were not kept separate in any way, but it was the man's good fortune that they were not attacked.

[*Note.*—Bhowanie, the man referred to by the deponent, being present, was asked to state the number of cattle he lost. He said in reply that he lost 15, some from starvation, and some from *matah*; he has only 5 head of cattle left out of 20.]

Humeerpore, dated 28th April 1870, 7 A. M.

Case.

Saw on the roadside a cow, 8 years old; slight discharge from eyes, worms in the eyes, hair falling off, and scabs all along the spine, ribs, hip, and haunch bones. Worms are in the inner canthus and inside the eye. The entire skin is patchy in appearance, from desquamation of cuticle and falling off of hair.

Calf healthy, except being a little pot-bellied.

Coocher village visited 29th April 1870, 6 A. M.

Visit to Coocher village.

BRINDA SING, MOHEPAL SING, THAKOOR SING, of Coocher, showed a bullock that had been

Case.

affected this time last year with *matah*. The animal exhibits no trace of the disease and seems to be in perfect health, except that the dung is rather soft. This animal was ill for a month last year and had discharges from eyes, nose, and mouth; watery stools, no blood. The animal is seen out of condition, and has not recovered its former condition.

Evidence of villagers.

The owner (Issur Paul) had 8 bullocks and 2 buffaloes, and that was the only one affected. The rest were tied up separately from this animal (a few yards). Last year Bhowanee

Losses from rinderpest in 1869.

lost 2 head of cattle, Issoria 4, Thakoor 3, Chowkeder 1, Hurran 4, Gunga 5, Canye 3: in short, all in the villages lost more or less from *bhawanee*. The cultivation, however,

Effect on cultivation.

had gone on as usual, the people having borrowed money from the Bhowrahs on inter-

Interest on money.

est varying from Rs. 12 to 24 per cent. per annum. There was considerable suffering among people who lost cattle from cattle plague. Cattle are served by young bulls that

Bulls.

have not been castrated, or bulls brought from other places.

Scarcity.

There was no scarcity of fodder in the village last year. This disease appears in

History.

the village every 3, 4, or 5 years. The village stands on the side of the high road leading

Herds.

to Banda. Herds of cattle are seen to be occasionally passing by this road; these are

Carts.

brought by *beparies* for sale. This, however, is very rarely done. Carts are con-

Price increased.

stantly passing over this road. The price of cattle has increased from Rs. 10 to 15, and even

Hides.

Rs. 20. There is one family of chamars in this village who skin all the dead cattle. Half the hide is given to the owner of the cattle and half kept by the chamar. There

Foot and mouth disease prevailing.

is foot and mouth disease in the village at present; no carts have been seen to come to

Origin of disease.

the village from Bengal. The disease prevailed in Soojpora last year before it came to this village. The cattle of both villages sometimes graze together.

Case

[*Note.*—The Commission saw a bullock with sorefeet—the result of the foot and mouth disease; and in the off-hind cleft there are maggots. The animal is in poor condition and great pain, and unfit for work.]

Chundowkie Village.

Visit to Chundowkie.

Visited a part (*purwa*) of the Chundowkie village; had the disease *bhawanee* in the

Rinderpest in 1868. Symptoms.

year before last, when 5 animals died. The symptoms described by the villagers showed that the disease was rinderpest. They informed the Commission that they had observed eruptions on the shoulders, ribs, and dewlap; during the attack all the cattle of the village were not attacked. The sick and the healthy cattle were kept in the same place.

Rinderpest in 1869. Village stock.

In another part of the same village (Chundowkie) there was *bhawanee* last year about this time. There are nearly 200 families here and 300 herd of cattle, of which number 150 are bullocks and the rest cows and buffaloes. The latter

HUMEERPORE.

number 25 or 30. About 25 or 30 died last year; may be more, but certainly not less. Somewhere about 75 head of cattle were attacked. The death-rate was 2 to 4 in each score that were attacked. The disease comes on after an interval of 3 or 4 years. Two bullocks belonging to the deponent, Sheck Mohamed Ariff, farmer, were produced before the Commission, and one of them has recently recovered from an attack of foot and mouth disease. They are still out of condition and only able to do light work. The symptoms of the disease are,—purging blood, off feed, ears drooping, coat staring, running from eyes, mouth, and nose; inside of the mouth hot, but not sore. The animal dies from the 6th to the 16th day of the disease. There was a great want of fodder last year, but no cattle died of hunger; the owners fed them somehow or other; nearly 15 buffaloes died of *chechuck;* no goats or sheep were attacked; they never get *chechuck.* They get some sort of disease and die, but the deponent does not know the name of the disease. In the month of Jyeth (May) there is a cattle fair at Gugneer, 36 miles distant from this village, and there the people go and buy cattle; 15 or 20,000 head of cattle are annually sold in that fair. The *pykars* occasionally bring cattle for sale, but if any villager wants to buy a bullock at a time when the *pykars* are not here, he goes about the village and buys it from some fellow villager.

Loss. Mortality. History. Cases. Symptoms. Scarcity of fodder. Buffaloes, goats, and sheep. Cattle fair of Gugneer. *Pykars* (dealers.) Private dealing.

The people graze their cattle on both sides of the high road to a distance of three-quarters of a mile; there is no actual pasture ground belonging to this and neighbouring villages, as all the land is arable. The number of cattle kept by the people has not been reduced, the people keeping only so many cattle as are absolutely necessary for agricultural work. The people send their grains to Cawnpore for sale. They suffered great loss owing to the death of their cattle, but they borrowed money and sold their jewels for purchasing cattle, and those who could do neither failed to cultivate their land. The rates of interest vary from ½ an anna to 2 annas on a rupee per mensem. On the occasions of former outbreaks some of the people who lost had to borrow money for carrying on the cultivation. The disease is considered to be infectious, for a healthy animal coming to an affected village catches the disease; the sick are separated from the healthy and are altogether kept in separate houses when there are means of adopting the measure; when there is only one house the sick and healthy animals are, as a matter of course, kept together. The disease does not attack the entire herd in the same house; a few generally escape. Has seen an animal get *chechuck* a second time, after the interval of 2 or 3 years. The deponent himself lost two bullocks last year from a second attack of *bhawanee,* the first attack having come on 4 years before, but in man *chechuck* also comes on sometimes more than once. The cattle are not inoculated as men are. Cattle poisoning has not been heard of. The village chamar states that he got 33 hides last year (25 of cattle and 8 of buffaloes). The meat of animals that had died of *chechuck* is eaten by the chamars. Small red spots are seen in the bowels as are observed on the skin.

Grazing. Pasture land. Sale of produce. Effect on cultivation. Interest on borrowed money. Infectiousness. Segregation. Second attack. Inoculation. Cattle poisoning. Evidence of village chamar. Diseased meat.

DISTRICT OF CAWNPORE.

CAWNPORE.

Village of Rampore, east of Humeerpore, visited 30th April 1870.

MULWA CHAMAR and HUKUM CHAMAR of Rampore say,—that there were 250 head of cattle in the village, of which 100 died last year of *matah.* The village of Ameerpore, on the Cawnpore road, 3 miles distant, had the disease first; it subsequently came to Rampore. The disease commenced in May and lasted for about a month. The symptoms of the disease were,—discharge from eyes, nose, and mouth (sometimes blood issued from the nose); purging offensive matter and blood; mouth hot, but no excoriations were observed. The diseased cattle died in 4 or 5 days; they were off feed and drink. The animals which recovered remained weak and out of condition for a long time. There was no want of provender. Had seen the disease in the village 10 times. It comes on every 4 or 5 years. Last year it affected all the surrounding villages, *viz.,* Lowri, Bugoria, Sidhowl Bandh, Unnoopore, Bebeepore, and Mohota. We consider the disease to be infectious. There were about 100 houses in the village. Never heard of any cattle poisoning in this part of the country. The hides vary in price from 8 annas to 1 rupee, and are taken by the *beparies* to Cawnpore. The hides are not cured or prepared before being taken away. There is *khoorfutta* in the village. Get their cattle from the fair of Gugneer. The *beparies* also bring herds of cattle for sale. The price of cattle has doubled. The reason of this is the reduction in number by deaths.

Visit to village Rampore. Village stock. Loss from rinderpest. Origin of disease. Symptoms. Scarcity of provender. History. Infectiousness. Cattle poisoning. Hides. Foot and mouth disease. Supply of cattle. Price.

Lahoreemow village.

THAKOOR MULLA, 70 years old, and an inhabitant of the village, says that there was *matah* last year in this village about this time. It came from the east from the villages of Apmarmow, Sallia, Shahabazpore, Pusser, and Dubsowria. Lost 20 head of cattle out of 100. Out of this number 10 died of hunger and 10 of *matah.* There is no disease at present of any sort; animal affected with *matah* leaves off feeding, is thirsty, has discharges from eyes, nose, and mouth. If the case turns out to be *debee,* purging comes on with blood; if to *khoorfutta,* the feet become sore and maggots form in them. This last malady is not fatal, but

Visit to Lahoreemow. Rinderpest in 1869. Origin of disease. Mortality. Symptoms. Foot and mouth disease.

CAWNPORE. it lays up the animal for a month or so. In *debee* the animal dies in 4 to 10 days. It becomes extremely weak, and remains so for four months or so; in 20 affected with this disease
Mortality. half survive and half die. Have seen this disease 10 or 12 times, and it appears after an interval of 2 or 3 years. It is sometimes more severe than others. There was a great
Scarcity of provender. want of provender in our village last year. We give no medicine to animals affected with *debee*. Deponent did not lose any cattle. When an animal dies of hunger, it gradually becomes thin, is unable to move, drops down and dies; there is no discharge from eyes, nose, and mouth.

Cawnpore Station, dated 2nd May 1870, 7 A. M.

Cawnpore Station. SERGEANT MURPHY has been Commissariat Butcher Sergeant for 9 months. Has seen only
Evidence of Sergeant Murphy. one case of disease, 9 months ago. The mouth became sore; the lower lip rotted away. The feet showed no symptoms of disease. The animal was ill six days and died; the intestines
Foot and mouth disease. showed no evidence of disease. Purged for two days owing to a purge of oil and salt which was given it—sweet oil one dram and a handful of salt. Sees all the carcasses of
Quality of meat. animals killed for consumption, and has never detected any disease. The stomach and bowels are not opened nor examined; the Sergeant can generally detect any disease which may exist from the conditions of the eyes, heart, and kidneys. On Thursday last 11 sheep were
Disease among sheep. taken ill, and 4 died on the common. They were examined, and the liver and heart were enlarged and stomach filled with undigested food. The belly was very tense; has never found any of the lungs heavy; has found the lungs heavy at home before coming out.

Evidence of Kassim Ally. KASSIM ALLY, has been meat agent for 2 years, and has never seen any cattle brought
Foot and mouth disease. to the Commissariat with any other disease than foot and mouth disease. Has heard of *matah* among cattle and sheep. Describes the symptoms correctly, and says that it comes at
Rinderpest. all seasons and prevails all over the district. Saw the disease among cattle at Meerut about
Rinderpest at Meerut. a year ago.

Evidence of a *beparee*. BOXOO BEPAREE is a cattle merchant, and gets cattle for the Commissariat from all
Foot and mouth disease. parts of the country. Sees a good deal of foot and mouth disease. Has heard of *matah*; cannot recognise *matah*, and says that he has not seen nor heard of it in the Cawnpore
Rinderpest. District. Has been a *beparee* for about six months.

A sirdar of bullocks, who was present, and on one occasion was employed to take bullocks
Rinderpest at Hissar. from Hissar to Ferozepore, states that the cattle were taken ill with *matah* and four of them died on the road. It occurred about this time of year. He describes the symptoms of the disease correctly, and states that an eruption appears on the skin. The animals on arrival at Feroze-
Quarantine. pore were put in quarantine, and disease did not spread in that place. This man is an inhabitant of Cawnpore; has been in the Punjab for 20 years. He has seen the disease *debee* in Ferozepore, Sealkote, and Umballa; at Dehra cattle die from eating a particular kind of gram
Rinderpest in the Punjab. in large numbers at a place called Shoregatty.

At Behiah there is a great jungle where cattle are sent to graze. Here also large numbers of cattle die; when the rains commence the number of deaths is greater. The cattle are only taken there in the rains. The inhabitants of the place avoid this locality.

Unaffected animals show all the symptoms of *matah* which he describes correctly; the skin of the mouth and tongue comes off He has seen a Conductor opening cattle *post-mortem* and saying that blisters form internally.

Visit to Dairies. *Cawnpore Dairies visited 2nd May* 1870, 6½ P. M.

Visited the Goalaparah of the Collectorgunge at Cawnpore. There were only 8 or 10 head of buffaloes and 10 or 12 cows, all in health. One cow belonging to Hurrolall Aheer looked ill, and a slight discharge was observed from the eyes and nose. The
Foot and mouth disease. owner said that it had foot and mouth disease a month and a half ago. Hurrolall, an
Cattle fair at Muckimpore. elderly man, said that the milkmen periodically went to the cattle fair of Muckimpore, 24 coss (48 miles) distant from Cawnpore, and purchased the cattle and buffaloes there; the *beparees* bring them there from Etawah and Agra; the fair takes place in Maug (January) and Saon (July); there are thousands of cattle for sale; when the fair is over, and the dealers find that they have not sold all their stock, they bring the animals to Cawnpore for sale. The
Price of cattle increased. price has increased from Rs. 30 to 50 in buffaloes and from Rs. 20 to 30 in cattle. Had
Rinderpest in 1868. *bhowanee* 1½ year ago in the month of Srabon (August). The symptoms were,—running from
Symptoms. eyes, nose and mouth, purging blood, off feed, no eruptions, even on the skin; four or five
Treatment. head of cattle died on that occasion. The deponent lost 1 and 4 survived. *Ghee*, *suttoo* and
Hides. water, and other cooling drinks were given. Moochees took the hides and gave the owner one
Foot and mouth disease. rupee for a buffalo hide and 8 annas for a cow hide. There is now foot and mouth disease in the town. There is a large number of cattle at General-gunge.

CAWNPORE.

At some distance another Goalaparah was visited. It was a small one, and Bhoonjoo Aheer, a man not less than 65 years old said that they generally got their supply of cattle from Muckimpore fair and sometimes the *beparees* brought them to their places from Lahore, Agra, and Gwalior. The price of cattle has increased 25 per cent.; of late there has been no *matah*; 7 years ago his cattle and the cattle of the locality had the disease, but he cannot say how many died. He described the usual symptoms. There were other milkmen with him, but they would not give any information. The deponent had seen eruptions on the skin in some cases.

Supply of cattle.
Increase of price.
Rinderpest in 1863.

Kakoorie village visited 3rd May 1870, 6 A. M.

Visited the village of Kakoorie, 4 miles to the west of Cawnpore. It contains 40 or 50 families, mostly boatmen; a Hindoo village; they have only 3 or 4 buffaloes and about 40 head of cattle, mostly bullocks; they however follow the profession of agriculturists; there are also 5 or 6 carts; they work at Cawnpore. The people go for cattle to Muckimpore fair and Sain village: *beparees* with herds of cattle and buffaloes pass by the Grand Trunk Road often; they come from the western districts. There is no disease of any sort at present; 3 years ago there was *khoorfutta*. There has been no *debee* in this village within the remembrance of men 40 years old. The village stands on the side of the Grand Trunk Road. (The deponents are Khoob Lall and Thakoor Proshad). The chamars skin the carcasses, but pay nothing. Never heard of *debee* attacking cattle; can't say whether the price of cattle has increased or not. In *khoorfutta* the cleft of the foot gets sore and the mouth salivates; no casualties from this disease.

Visit to Kakoorie village.
Village stock.
Muckimpore fair.
Herds of cattle.
Foot and mouth disease in 1867.
Rinderpest.
Hides.

Sadoolapore, 200 yards from the Grand Trunk Road, contains 20 or 25 houses and 20 head of cattle and 2 head of buffaloes. There are 6 families of chamars, who do not keep cattle. They work and skin the carcasses of cattle. There is no disease of any sort at present. Last year in the month of Jyth (May) there was the sickness called *debee* among cattle in the village of *Tatee*. There has been no *matah* in this village for the last 20 years; cannot say how many died in the attack 20 years ago. When the cattle become old and unfit for work, they are sold to the butchers of Cawnpore. The people go about and make private bargains. They go also to Sain Bazaar, eight miles to the north side, and get cattle there. The Sain Bazaar meets only once weekly on Sundays. *Beparees* are often seen driving herds of cattle and buffaloes along the Grand Trunk Road; they come from Muckimpore and other western places which they cannot detail. The moochees take the hides and sell them at Cawnpore, and 8 annas, 12 annas, and sometimes 1 rupee are taken by the owner.

Visit to Sadoolapore.
Village stock.
Rinderpest in 1869, and 1850.
Supply of cattle.
Beparees (drovers).
Hides.

Tatee village, 1,200 yards distant from the Grand Trunk Road.

Village Tatee.

CHOPA AHEER, BHODYE TELEE, LOCHUN AHEER, SUBSHOOK AHEER, and others say there are nearly 40 or 50 houses and 40 bullocks, 7 cows, and 20 buffaloes. There are also 12 goats; no sheep; a Hindoo village; last year by this time 40 or 50 head of cattle died of starvation. There was no disease of any sort. There is no disease of any sort at present; get their supply of cattle from Sain Bazaar, Hurchandpore near Etawah, and Gugneer.

Evidence of villagers.
Village stock.
Losses from starvation.
Supply of cattle.

Sain Bazaar meets on Wednesdays and Saturdays. Hundreds of cattle are bought and sold. It is eight miles distant from Cawnpore; carriages go there easily; chamars take the skins and pay 8 annas for a cow skin, and 1 rupee for a buffalo hide.

Hides.

The deponents (50 to 55 years old) never saw any *matah* in their village. The cattle graze in the fields. The cattle of the city of Cawnpore and the village cattle graze together. *Beparees* never come here; they generally take herds of cattle with them on the Grand Trunk Road. Cannot say whence the *beparees* come. (The *chamroara* or *bhagar* is covered with bones, and is close to the village. The cattle are in pretty good condition.)

Beparees.

Baragow Tatea.

Visit to Baragow Tatea.

BUNDEE CHOWDHRY says that this village has 20 houses and somewhere about 30 head of cattle, of which some are buffaloes. Last year about this time 22 head of cattle died of starvation. No disease here at present; the men had small-pox last year, but not the cattle. There has been no *debee* among cattle here. Seven or 8 years ago cattle died of foot and mouth disease. (The cattle here looked nice and healthy). Cattle graze in the fields. The villagers go for cattle to Bellour, 18 coss to the west. They also go to Muckimpore. *Beparees* do not come to this village, but they pass the Grand Trunk Road with herds of cattle and buffaloes. Disease is called *gowthonsitlah* here: (*gow* means cow, and *thon* means udder).

Village stock.
Deaths from starvation.
Foot and mouth disease.

Saw a bullock with running from eyes, nose, and mouth; bowels a little relaxed and slimy. The owner, Gurrea, says that it eats, blood comes out from the nose, but it may be that this is produced by rough handling. Did not see any excoriation inside the mouth. The coat did not appear to be smooth.

A young man, apparently a Railway chaprassee, came up at this time and joined the conversation, and he said that *debee* was called *gowthonsitlah*, and that the people did not know the disease and could not recognize it.

CAWNPORE.

2nd May 1870, 11 A. M.

Supply of hides. Visited the Cawnpore Government Tannery, and met Captain Stewart, R. A, the officer in charge. Were informed by him that only slaughtered hides (*halali*), and that of the best quality (cows and cow buffaloes), were brought for Government use, obtained through a contractor, Mr. Jones, from Delhi, Agra, Cawnpore, and other places at Rs 100 to 120 a score, the Calcutta market price being from Rs. 75 to 80 per score. The hides purchased are the very best obtainable; were told that hides obtained from the neighbourhood

Meerut hides. of Meerut were very often found to be affected with *luka*, which is said to be a worm which burrows under the skin of the back and perforates the hide in several places.

Murdari hides. *Murdari* hides (hides removed from animals which have died) or hides marked by *debee* (small-pox or rinderpest) are not bought for this establishment, and as only the best hides

Trade in dead hides. are taken, hides of this sort are never offered. Saw and examined several employés of the establishment (chamars), who informed us that a trade in *murdari* hides is extensively carried on in Cawnpore, and has increased within the last six months. Among those *murdari*

Debee hides. hides *debee* hides are said to be common, and easily recognizable as such by experts. One man

Peculiarities stated that all *debee* hides are affected by small spots, unless the animal is killed at a very early stage of the disease. One man said that *debee* had been very prevalent on the other side of the Ganges in Oude last year about this time.

Proceeded to the village in which the chamars who deal in *murdari* hides live and carry

Debee hides. on their business. There saw a heap of one thousand *murdari* hides which had been sold two days before to a Calcutta merchant, price Rs. 32 a score. These men informed us that hides of cattle which have died of *debee* are easily recognized by small scabby spots about the size of a split pea (size shown by informant by a piece of gravel), which occur all over the hide.

Source. All the *murdari* hides are brought from Oude, and come in thousands.

The number has increased greatly within the last year. They said that this time last year great numbers of *debee* hides came from beyond the Ganges, and that now a few were brought.

Disease in Baraich and Seetapore. Said that the disease was prevailing at Baraich and Seetapore.

Visit to Commissariat Shed at 6 P. M.

Saw the Commissariat bullocks, 116 in number, in the Commissariat yard. The Sergeant in charge, who had been three years in charge of 250 Commissariat animals at Lucknow, stated

Foot and mouth disease. that he had only seen hoof and mouth disease among the bullocks under his charge during that time. He showed us three cases of foot and mouth disease almost recovered.

The Sergeant stated that if affected animals were kept apart from the rest, the disease did not spread, and that if the animals were muzzled when their feet became affected, their mouth did not become sore. He had always found that the feet became sore first.

3rd May.

Visited the Government Tannery at 7 A. M. Were kindly shown over the establishment by Captain Stewart. Saw some *luka* hides, but did not ascertain anything in addition to what was yesterday recorded.

Were told that the salt used in curing hides had much to do with their value. Those cured at Patna, Dacca, and Derbungah with salt, fetching a higher price in the home market than those cured with the coarse salt of the North-West. Captain Stewart kindly promised to obtain through his subordinates some *debee* hides for the Commission.

FUTTEHPORE.

DISTRICT OF FUTTEHPORE.

A. C. Barnard, Esq. *Report on the Cattle Plague by* A. C. BARNARD, Esq., *Officiating Collector,—dated 5th June* 1868.

From such inquiries as I have been able to make, it appears that there are at present three different diseases prevalent among cattle in the Banda District, all of which are more or less fatal, and two of which are certainly contagious and infectious. Of these three diseases two are very widely spread; the other seems to be confined almost entirely to the Kirwee Sub-division.

Two forms are not uncommon in this country. The one is a disease in which the hoof dries up, the mouth becomes dry, and a discharge takes place from the nostrils. This is prevalent all over the district; the other, which is small-pox in cattle, is confined to the Kirwee Sub-division, and was known in this country as early as 1837, when children were inoculated by Mr. Brown, a Surgeon in Assam, from cattle labouring under a very severe epizootic of *matah* (small-pox), and was further mentioned by the Committee of the Provincial Medical and Surgical Association at Liverpool in 1839. (*Vide* Murchison's report in the *Lancet* of January 13th, 1866.)

The third form of disease is apparently an unknown one, the chief symptoms of which are that the cattle refuse food; they are then attacked with diarrhœa, ending in a discharge of

FUTTEHPORE.
A. C. Barnard, Esq.

blood, under which they become enfeebled, sink and die. Great numbers of cattle have died of this form of disease, though some of them have been cured by the exhibition of salt and *mash-ka-roti*, which I am given to understand is a cake made of a pulse called *urudh* mixed with oil. In the Sekoondah Pergunnah of Banda this disease first appeared among the cattle on their return from the hilly country, whilst in the Pupendha Pergunnah it is most prevalent in the villages along the banks of the Jumna.

Neither of these three diseases is the rinderpest that was so destructive to cattle in England a few years ago. After long discussion, the conclusion was come to by Professor Gamgee, that the rinderpest was not small-pox in cattle, as it was at one time supposed to be. The reasons on which this conclusion was based were :—

1*st.*—The difference of texture and nature of the pustules in the two diseases;

2*nd.*—That vaccination of cattle proved of no use towards checking the advance of rinderpest, the only means of coping with which was "stamping it out" by entire sequestration of the diseased animals; and

3*rd.*—That a cow that had recovered from an attack of rinderpest took small-pox from vaccination in an experiment made by Dr. McCall of Glasgow.

The third form of disease alluded to above is also wanting in many of the essential symptoms of rinderpest, although in some cases of rinderpest there was no cutaneous eruption. It was only absent in those cases when death ensued within 3 or 4 days of the seizure, whereas in the disease under notice I find no mention of any eruption: and again, rinderpest was always accompanied by a very offensive smell from the whole body, and more especially from the abdomen, which seems to be entirely wanting in the present disease. These, however, are points which could only be cleared up by a local inquiry, such as I have not the means of instituting.

I am happy to say that no disease has been imported into this district, nor is there any truth in the statement made by the *Pioneer*, that cattle are being exported from Banda, as far as this district is concerned.

I have had careful enquiries made both through the Tehsildars and through the Police, and have also had some opportunities of questioning the Zemindars on the subject, of whose answers I have availed myself, and with the exception of a few cases of the disease first mentioned in this report in Ghazeepore Pergunnah, the district is at present quite free from disease of any sort.

I have ordered the ferries at Ekdullah, Vashenpore, Moorkar, Chillaturah, and Valianpore to be watched, and any unusual ingress of cattle to be immediately reported to me.

SOOBEDARPORE.

Soobedarpore, five miles north-east of Futtehpore,—21*st May* 1870, 6 P. M.

Case.

A cow three years old; gave birth to a calf six months ago; condition rather poor; six days ill; off feed; excessive thirst; ears drooping; profuse discharge from eyes, nose, and mouth; a few eruptions on the skin; coat staring; purging blood and mucus; excoriations on the gums; red spots on the tongue, which is furred; muzzle dry; the owner says that he gives cold water to drink, but nothing to eat; milk entirely suppressed; does not allow her calf to approach her; animal very weak; vagina very slightly *congested;* breath offensive. On 24th May 1870 animal again seen, and found to be improving.

Evidence of villagers.

GOFAUL AHEER, BUDLOO AHEER, BHUGWA AHEER, CHURUNGEE AHEER of Soobeydarpoora, from 27 to 60 years old, say,—Our village has 57 houses owning upwards of 250 head of cattle, of which 100 are cows, 100 bullocks, and about 50 buffaloes. There are no sheep nor goats; the cattle of our village have been suffering from *bhawanee* for the last month, and somewhere about 12 animals have fallen victims; six or seven are still ill. The symptoms are,—off feed, salivation and running from eyes and nose, costiveness for the first two days, then purging blood and mucus; great thirst. The ears of the animal droop, and it looks stupid and stands aloof; sore mouth; very offensive breath; and death ensues from the 3rd to the 8th day.

Village stock.
Disease *bhawanee* prevails.
Mortality.
Symptoms.

There are recoveries, but they are few. Four or five animals recover out of 20 attacked. The disease is communicated from one animal to another; the village of Illisramow, half a mile to the north-east of our village, had the disease. The cattle of this place and the cattle of our place graze on the same pasture and are watered in the same place. We do not keep the sick separate from the healthy; there is no place for that. The cattle graze during day and are tied up at night at home. They get *bhoosa* and *suttoo* or chaff. The price of a cow has increased from 10 to 15 rupees. The cause of this increase is, that every other necessary article has increased in value. There is no cattle fair in the neighbourhood, but we get our supply of cattle from Futtehpore and Hossengunge, where the *baparees* bring cattle for sale. Our village is fully two miles off the high road. Ten or 12 years ago there was *bhawanee* in our village, when the mortality was greater than now. The disease as yet is not so bad as the former attack. Our cattle get *khoorah*, but that is generally not fatal; in that disease the clefts of the hoofs get sore, the mouth is not affected; the hides of bullocks not yet yoked to plough, and cows which have not given birth to calves, are taken by chamars. The hides of plough bullocks and mother cows are taken by the owner; the hides of *bhawanee* cases are sold to chamars, and by them sold to *pykars* at Futtehpore. There are no carts; this is a Hindoo village.

Death and recovery rate.
Infectiousness.
Origin of the disease.
No segregation; reason why.
Housing.
Feeding.
Price increased.
Cause of increase in price.
Importation of cattle.
History.
Former attack more severe.
Khoorah.
Its symptoms.
Hides.

FUTTEHPORE. Case. A bullock, four years old; condition fair; ten days ill; has commenced picking a little for the last two days; did not eat at all for the last eight days; had great thirst; still has slight discharge from eyes and nose, but the marks show that there was profuse discharge previously. The muzzle is still somewhat dry; ears drooping; the animal looks stupid and purges a little; the stool is clay, coloured; did purge watery stools mixed with mucus; coat not very rough; slight excoriations on the gums; the buccal papillæ are, however, all right. A few eruptions exist on the skin of the shoulders and neck; animal evidently recovering. Seen again on the 24th; better; the animal continues to recover.

Village of Narainpoor, 11 *miles north-east of Futtehpore, visited* 23*rd May* 1870, 5-45 A. M.

Case No. 1. A bullock, 9 years old; condition poor; coat staring; profuse discharge from eyes, nose, and mouth; muzzle dry and reticulated; ears drooping; laboured breathing, moaning, congestion, and excoriation of gums; furred tongue; offensive breath; purging pure mucus with streaks of blood; 4 days ill; off feed; conjunctiva much congested; thirst; lying down; evidently slightly delirious; no eruption on the skin; prepuce slightly congested, with slight discharge.

Case No. 2. An entire bull, 3 or 4 years old; condition good; 4 or 5 days ill; discharge from eyes, nose, and mouth; ears drooping; muzzle dry; congestion, excoriation, and aphthous deposit on gums and buccal papillæ, and extensive patches of excoriation with aphthous deposit on the palate; very weak; dysenteric purging; no eruption on the skin; off feed; thirst; prepuce congested, discharge therefrom.

Case No. 3. (From Goneshpore).—A bullock, recovering; has been ill a month; condition very low; lost one of the eyes from maggots depositing in it during disease; desquamation of cuticle on shoulders and neck. On manipulating the skin, the eruption feels like a series of scabby elevations; coat falling off; bowels loose.

Case No. 4. A male buffalo, recovering from rinderpest; on loins and back the skin is coming off in the same way as the buffalo seen at Dowlutdear and Agra.

Case No. 5. (From Narainpoor).—A cow, 3 years old; 4 days ill; congestion of gums; no excoriation; discharge from eyes, nose, and mouth; no eruption on the skin; ears drooping; off feed; coat staring; condition fair; vagina slightly congested.

Case No. 6. Another cow, 5 years old; condition fair; 4 days ill; picking a little; presents the same symptoms as the preceding one.

Case No. 7. Another cow of the same village, 10 years old; condition very poor; recovering, but showing well-marked shallow pits on shoulders and withers.

Case No. 8. Another bullock of the same village with like pits of eruption on the skin, and likewise recovering.

Case No. 9. Another black bullock shows the same signs.

[*Note.*—The cows and bullocks show the eruptions most on the withers and the back and shoulders; buffaloes on back and loins. The Commission saw 20 head of cattle and buffaloes suffering or recovering from rinderpest.]

Evidence of villagers. *Evidence of* HURPAUL SINGH, *Zemindar;* MATHADEEN, PATWARI; HAZZARI, AHEER; CULOO, AHEER; BHOWANY DEEN, *Aheer, of Narainpoor.*

Village stock. Rinderpest in April. Treatment. Disease about 1860. Narainpoor is one of the hamlets of Motheepoor. There are 25 families residing in our village, owning as they did nearly 60 head of cattle, of which five have died of *bhawanee*, which made its appearance in Bysack last (April and May); the disease is now on the decrease and only 4 or 5 are ill. We do not generally administer any medicines in *bhawanee* cases, but a few get ghee to drink,; seven or eight are convalescent 10 or 12 years ago; there was a mild attack of *bhawanee;* we are not aware of any other attacks.

Symptoms. Season. Sheep and goats. Burial. The symptoms of the distemper are,—off feed; thirst; constipation of bowels for the first 2 days; then purging of blood and mucus, ears drooping, hair standing on end. There are eruptions in some cases, and not in others. The previous attack came on at this season. There are no sheep in the village; there are goats, but they have not had an attack. The carcasses in *bhawanee* cases are generally buried. This is done of our own free will, as we are satisfied that burial of carcasses will check spread of disease; but those who cannot afford to bury throw them away.

The deponents here correct themselves and say,—we do not invariably bury the carcasses, but we buried the animal that had died of *bhawanee* the first; we have a notion that if the animal which dies first is buried, the disease would be checked.

Hides. Cattle markets. Cattle droving. The chamars take the hides and sell them, and give a part of the price to the owners. The chamars sell the hides in markets and fairs to petty dealers. We purchase cattle from Futtehpore, Chulaha, and Bencee, where there are bi-weekly hâts. The beparies bring the

cattle from the western districts (Banda and south of the Jumna). Gradually the number of cattle is being apparently reduced and the price is being raised daily. The cow that fetched 10 years ago Rs. 10, costs now from Rs. 12 to 15, or even more. We have a few carts, but they are used in the village in removing the corn and in conveying manure (ashes). There is another sort of disease among cattle; it is *khcorah*; it is not very fatal. In *khoorah* the clefts of the hoof alone are affected, but not the mouth. Our village stands at a distance of 3 miles from the high road. The cattle graze in the fields during day and are housed at night, where they get *bhoosa* and grass. Before the disease appeared in our village it had attacked the village of Motheepoor. The cattle of both these places come in contact daily on the pasture. We do not consider the malady to be infectious, for the disease does not attack every animal in the house or herd. One attack protects against the second; we are, however, not quite certain of this.

FUTTEHPORE. Price of cattle. Foot and mouth disease. Symptoms. Infectiousness. Second attack.

The Zemindar positively asserts that the first attack gives immunity from the second, but another man (an agriculturist) declares that he does not know.

We have seen calves get ill with their mothers, and we have also seen them escape, while their mothers caught the disease; we have known of an instance in which a man lost 4 out of his 5 head of cattle. Another man, named Govindo, lost the only two he had.

[Here followed a statement of the losses of individuals, showing from 1 to 14 deaths, the usual loss being 2 or 3]

The loss among cattle will not interfere with the cultivation of the land. People will however borrow and buy cattle and then till their lands. The people with carts and pack bullocks pass through near Motheepoor, which is ¼ mile distant from the high road. There is a road which passes to Cassempoor and Hutgow. There is a well near our village, but there are no inns or regular places for rest; but a few do stop under peculiar circumstances. We are not aware of any sick cattle stopping there, or dying there or in the vicinity; the health of men is excellent. The bullocks work in the field for 3 or 4 hours in the forenoon and 3 or 4 hours in the afternoon. We have not got any regular bulls kept up, but our entire bullocks serve the cows. In our villages 10 or 15 calves are born yearly; the bullocks form the majority of our cattle.

Breeding.

Visit to Satraonpore.

Satraonpore is 11 or 12 miles from Futtehpore, 4 miles off the main road; a *purwa* of Guneshpore; contains 11 houses. There were 80 head of cattle before the murrain; half of these have died; the disease commenced 1½ month ago; there is no disease now; it disappeared about 8 or 10 days ago; all that got the disease died with a few exceptions. In Guneshpore only 2 died out of 70; these two belonged to different owners, and no precautions were used to prevent the spread of the cattle disease among the cattle of the village; the Putwaree of the village, who has been the Putwaree for 17 years, says that no disease existed there in former years; not even when Moteapore and Narainpore were affected 10 years ago.

Visit to Satraonpore. Village stock. Losses from rinderpest. Rinderpest in Guneshpore. No previous disease

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24th May 1870, 6 A. M.

Soobeydarka Poorwa.—The cow seen ailing on the 21st has a few eruptions on the skin; the other affected cow seen has also eruptions on shoulders and neck.

Visit to Soobeydarka Poorwa.

A buffalo bullock 6 years old; condition poor; 5 days ill; discharge from eyes, nose, and mouth; lower lids œdematous; conjunctivæ very much congested; buccal membrane also congested and tumid; gums still congested; breath very offensive; had purging, watery stools; tongue a little furred; on back 5 or 6 shallow pits, evidently the effect of eruption; feeds now; emaciated and very weak; appetite good; animal apparently recovering.

Case.

The villagers state that when a cow with a sucking calf becomes affected with disease, very often the calf becomes affected by drinking the milk; but this is not always the case.

Calf infected by cow.

BEPOTEA CHAMAR of Soobeydarka Poorwa states—I have been living in this village for the last two generations; I am 55 years old; I deal in hides and cultivate land; I skin the carcasses of animals that die in the village and make them over to the owner; I get an anna or so for each skin; I sell the skins on account of the owners at Futtehpore market. The owners get the hides of those cattle which have given birth to calves and of bullocks not yet worked; I myself only getting an anna or so; but the skins of calves and of bullocks not yet worked are my property; the diseased skins sell at much less price than the hides of animals that died otherwise. I cannot distinguish a *debee* hide from a skin of an animal that died of other disease, or was slaughtered; I have never seen any pits or marks on *debee* hides; I eat the flesh of *debee* animals; I have found much blood under the skin in *debee* cases; we do examine intestines, but we do not eat them. Eight or 10 head of cattle died of *bhawanee* on this occasion. It has appeared in the village for the last 5 years; 5 years ago there was *bhawanee*, and it killed many more cattle than it is killing now. Hides are weighed and sold. An uncured skin of an animal dying, not of *debee*, sells for 6 annas, whereas a *debee* hide sells for 4 annas; the *beparees* at Futtehpore take hides; they dress them and sell them to dealers who take them to different countries for sale: the present attack is the third we have had in the village

Evidence of Bepotea Chamar. Hides. Diseased hides. Diseased meat. Rinderpest in 1865. Hide trade.

FUTTEHPORE. Foot and mouth disease.

during my lifetime; the cattle also get *khoorah* and the hoof becomes sore; the cattle also now and then die of a disease called *lorelie;* they eat rank grass, get hoven, ears droop; they purge, and die in one or two days. This disease comes on in August and other months; these cattle eat too much of standing grass which has been spoilt by rain, and die.

Evidence recorded 25th May 1870.

Evidence of villagers of Cheet Isapore. Losses from rinderpest. Village stock.

ABOOR RUHEEM and FUREED BUX of Cheet Isapore, 14 miles north-east of Futtehpore, say,—The disease appeared in our village about 12 or 13 days ago, and it killed 26 head of cattle; the duration of attack was 4 or 5 days; there have been no fresh cases; we do not know the name of this distemper, nor whence it came; never saw any such disease before; we own 27 head of cattle, but more were attacked; our cattle and the other cattle of the village graze together on the pasture; our cattle are on the common pasture during the day, but they are stalled during night; we do not consider the disease to be infectious, for had such been the case, other cattle of the village would have been attacked; the tract of the village visited last year by cholera among human beings has been this time visited by murrain among cattle; not that the very houses attacked by cholera last year had murrain this year, but other houses got the distemper.

Disease not infectious.

Cholera and rinderpest.

[These two men give hearsay evidence.]

Evidence of Shittaram Aheer, &c. Rinderpest in May 1870. Symptoms. Hides.

SHITTARAM AHEER, BOROOD MORYE, SHOODINOWA AHEER, GHUNNIE MORYE, CHITOOA, NOONIA, of Cheet, say,—There is cattle disease in our village, but there have been no fresh cases for the last 4 days. Two that had been ill began to eat yesterday; the last died 4 days ago. The first 4 informants lost 9 head of cattle. The cattle were off feed, purged watery stools, salivated from mouth, and died in 3 or 4 days; we call the disease *hija*. Never saw the like disease at any other time; we call the disease *hija* because the cattle purge and die; the hides of the animals that died of *hija* have been taken by village chamars; our cattle get *khoorah* now and then, but that has not at any season proved fatal. The first case occurred 10 or 11 days ago, and one after another died day after day; the last case occurred 4 days ago.

[Here the Putwaree presented his account of the casualties among the cattle of his village, but neither the Tehsildar nor any of the members could understand it; the Tehsildar said that he had directed all the Putwarees to keep a list of all the casualties among cattle and the dates of their deaths, but the list kept up by this Putwaree contained no information on any of these points.]

FUTTEHPORE.
W. C. Turner, Esq

Tabular Statement of Cattle Murrain which prevailed in the Futtehpore District in March and April 1870, dated 27th April.

Pergunnah.	Village.	Date of outbreak.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
		I.—From Murrain.						
Futtehpore	Muthyapore ...	20th March 1870...	1,200	352	150	200	2	The symptoms assigned to the murrain which furnishes the major portion of the figures of this table are, fever, discharges from eyes and mouth, and dysentery.
	Lukri ...	28th ditto ...	450	100	25	75	...	
	Rampore Mujra ...	14th April 1870 ...	150	17	5	10	2	
	Goura Kulah ...	1st ditto ...	312	72	63	...	9	
	Beedanpore ...	19th ditto ...	300	49	46	...	3	
	Poreah Subadar ...	18th ditto ...	150	3	1	...	2	The number attacked is,—per cent. of stock 18·85, and the deaths 10·8 per cent. of stock and 58·76 per cent. of attacked, excluding number still ill.
	Narainpore Mujra of Methyapore.	21st ditto ...	60	5	5	...	...	
	Guneshpore ...	10th ditto ...	300	46	46	...	...	
	Suthrobanpore ...	15th ditto ...	80	8	8	...	...	
Husure ...	Misrumow ...	14th ditto ...	272	81	81	...	...	The death-rate from *khoorah* is very small, being only ·25 per cent. of stock and 4·402 per cent. of attacked.
Hatgaon ...	Teni ...	25th March 1870...	900	235	125	50	60	
	Buroulie ...	Ditto ...	250	75	15	45	15	
	Ramipore ...	28th March 1870...	250	38	30	...	8	
	Bhukurna ..	Ditto ...	500	26	10	...	16	
	Sungrampore .	Ditto ..	150	25	17	8	...	
	Moari	10th April 1870 ..	500	8	4	...	4	
	Husunpore .	1st ditto ...	550	70	60	...	10	
Ghazeepore	Sooketi ...	1st March 1870 ...	561	88	61	5	22	
	Chuck Pyumburpore	15th ditto ..	502	84	60	14	10	
		Total ..	7,437	1,382	812	407	163	
		II.—From Khoorah.						
Futtehpore...	Soofa	21st April 1870 .	400	2	..	...	2	
Ghazeepore...	Lulauli ...	5th March 1870...	1,935	45	7	36	2	
Kurrah ...	Dulsowra	9th April 1870 ...	87	87	...	77	10	
Ditto ...	Deonye ..	10th ditto ...	425	25	..	10	15	
		Total .	2,847	159	7	123	29	
		GRAND TOTAL ...	10,284	1,541	819	530	192	

A. C. Tupp, Esq.

From A. C. TUPP, Esq., *Officiating Collector of Futtehpore, to the Commissioner of the 4th or Allahabad Division,—(No.* 304, *dated Futtehpore, the* 23*rd August* 1870).

I have the honor to report to you that a severe, but short, epidemic of cattle disease broke out in the Ekdulla Pergunnah during July, and lasted till the 16th August.

2. It will be seen from the enclosed statement that 140 cattle died in 5 villages within the month. It ceased about the 15th of August, and the Tehsildar did not report

FUTTEHPORE. A. C. Tupp, Esq.

its occurrence till after its cessation; for this he has been reprimanded. He now reports that disease exists in those villages.

Report of the Tehsildar of Ekdulla, dated 16th August 1870.

VILLAGES.	Number of cattle which have died in the month ending the 16th August.	Symptoms of disease.
Jehangirnuggur	50	Do not chew the cud, water flows from mouth neither eat nor drink, evacuations in some cases mixed with blood, and in others of black colour; some died in 4 or 5 hours, others in 3 or 4 days. Cattle seldom recover from the disease. Disease is called by the natives *ralia*, from *ral*, the Hindee word for water flowing from the mouth. It is supposed to have originated from feeding on green grass.
Bhadawan	31	
Saidpore .. } Pachmai ... } ...	29	
Pauli	16	
Anjna Kabir	14	
	140	

ALLAHABAD.

DISTRICT OF ALLAHABAD.

J. C. Robertson, Esq.

From J. C. ROBERTSON, Esq., *Officiating Magistrate of Allahabad, to the President of the Commission deputed to enquire into Cattle Disease,*—(*No.* 661, *dated the 23rd August* 1870).

I have the honor to inform you that cattle disease is reported to have broken out at Poor in Pergunnah Chayul and in the Munjunpore Pergunnah; the Police have stupidly not mentioned the village, but it cannot be far from Munjunpore, which is about 8 miles from Bhurwarie Station.

2. On receipt of further details and replies to the questions which have been called for from the Native Doctor deputed to those parts, I will communicate further with you, meanwhile I lose no time in informing you of the outbreak of the disease, as from *post-mortem* examinations of other cattle in this district which have died under similar circumstances, there is no reason to believe that the animals have been poisoned.

From J. C. ROBERTSON, Esq., *Officiating Magistrate of Allahabad, to the President of the Commission deputed to enquire into Cattle Disease,*—(*No.* 670, *dated the 26th August* 1870).

In continuation of my No. 661, dated 23rd instant, I have the honor to forward replies sent by the Native Doctor regarding the cattle disease at Poor and Usmanpore in Pergunnah Chayul; that regarding Munjunpore will follow.

2. Poor and Usmanpore are about 20 miles from Allahabad in the direction of Serai Akil, *viz.*, on left bank of Jumna; they are difficult of access at the present season, and there is no accommodation obtainable.

From J. C. ROBERTSON, Esq., *Officiating Magistrate of Allahabad, to the President of the Commission deputed to enquire into Cattle Disease,*—(*No.* 692, *dated the 1st September* 1870).

In continuation of my No. 670, dated 26th ultimo, I have the honor to inform you that disease has broken out amongst some cattle in this station. It is also reported as being in the Kurra Pergunnah in the neighbourhood of Serathoo Railway Station, where there is accommodation in the Tehseelee.

2 Detailed replies to the printed questions circulated by you will follow. I will also submit in a few days further report regarding cattle disease near Munjunpore, mentioned in my No. 661, dated 23rd August 1870.

R. Yeatman, Esq.

From R. YEATMAN, Esq., *Assistant Superintendent of Police, to the Officiating Magistrate and Collector, Allahabad,*—(*dated 3rd September* 1870).

In accordance with your request, I proceeded on the 26th ultimo to Munjunpore to inquire into the subject of cattle disease, and have the honor to report as follows the result of my inquiries.

Up to the present my inquiries have only extended to the Munjunpore Police Station circle, but I am informed that the disease has been and is still prevalent, more or less, in the Serai Akil, Kuralee, Puchim Surreera, and Koh Khuraj circles.

ALLAHABAD.
R. Yeatman, Esq.

The disease in the Munjunpore circle is of one kind, called by the natives *khoorah*; it in every instance attacks the feet, where sores gather. In no other way nor on any other part of the body does the disease show itself; 10 or 12 days is its average duration, when the animal either dies or recovers. In none of the villages, when I made personal inquiries, could I ascertain the cause of the disease; the villagers were utterly ignorant and could give no information whatever on the subject, but were rather of opinion that it was a visitation of Providence; prayers are offered up daily by the Hindoo community, but without, to my knowledge, any beneficial results. They adopt no remedial measures for the arrest of the disease.

From local as well as private inquiries, I think I have succeeded in obtaining an accurate account of the disease as it has lately and at present prevails in the Munjunpore circle. This circle comprises 70 villages; of these the cattle of 29 villages have more or less suffered. In the following 14 villages the disease still exists, *viz.*, 1, north of Munjunpore—Bussanee; 2, south—Bhelka and Osa; 11, west of Munjunpore—Pata, Domapore, Seya Nowgirwa, Ockapore, Putnona, Futtehpore, Mohuddeepore, Mugraie, Koraye, and Murokee.

It will be at once seen that the disease is almost entirely confined to the villages situated west of Munjunpore. Of 3,472 head of cattle attached to these villages, 551 have been attacked, 105 have died, 336 recovered, and 110 are still ill. In 3 villages—Ockapore, Nowgirwa, and Bussanee—the disease has been, and is still, very prevalent. Ockapore contains 125 head of cattle, and of these 100 have been attacked, 95 recovered, and 5 are still ill.

In Nowgirwa there are 268 head of cattle, 83 have been attacked, 4 have died, 47 recovered, and 34 are still ill.

Bussanee contains 150 head of cattle; of these 39 have been attacked, 25 died, 10 recovered, and 4 are still ill. It seems strange that at this latter village, the only one north of Munjunpore, the cattle should have suffered so severely, the disease here being of a far more virulent type than that of any other village in the circle. The disease is evidently now on the decline, as the fact of its having completely left the following villages sufficiently attests:—4 north of Munjunpore—Koron, Bheerasa, Fyzeepore, and Itchowlee; 2, east—Bisara and Kazeepore; 9, west—Bagapore, Doobea, Jeapore, Kaynie, Sootia Konda, Toolseepore, Kora, and Mullakia.

Of 1,982 cattle belonging to these villages, 172 were attacked, 49 died, and 123 recovered. Of these 49 cases which ended fatally, the comparatively large number of 25 to 30 attacked occurred at Itchowlee, a village situated close to Bussanee, and where the disease proved to be of the same virulent type.

Results of future inquiries will follow.

Tabular Summary of Reports received from the Allahabad District regarding the prevalence of Murrain during the months of July to October 1870.

Pergunnah.	Village.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Allahabad	Poorkhas ...	25th July 1870 .	1st September 1870	300	94	40	39	15	These figures were collected by a Native Doctor specially deputed. The disease is not named, except in two cases, where, it is called *haiza*—cholera. The symptoms assigned are,—fever, discharge from eyes and mouth, bloody evacuations, and spots upon the body. The number attacked is 33 per cent. of stock, and the deaths 15 per cent. of stock and 55 per cent. of attacked, excluding number still ill.
	Usmanpore	2nd August 1870	.....	100	34	12	19	3	
	Rusulpore Girsa ...	July 1870 ...	7th September 1870	394	135	82	26	27	
Kurrah	Jellalpore Tingree .	August 1870	6th October 1870. .	225	25	8	17	...	
	Muttiara ...	July 1870 .	Ditto ...	52	29	7	14	8	
	Putty Purbanara .	Ditto . .	Ditto ...	491	162	110	35	17	
	Putty Rupnarainpore	Ditto ...	Ditto :	361	169	40	88	41	
			TOTAL ...	1,923	646	299	238	111	

AGRA DIVISION,

COMPRISING THE DISTRICTS OF AGRA, MUTTRA, MYNPOOREE, ETAWAH, ETAH, AND FURRUCKABAD.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	No.	Date.	Reference and Purport.
	Historical Sketch ...	...	.....	Page 399.
Etawah.	*Collector of Etawah* ...	...	22*nd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 213. *Reports that no epidemic appeared among the cattle in the Etawah District in* 1868.
	Magistrate of Etawah ...	159	22nd April 1870 ...	Forwarding the Commission's Form No. 1 duly filled in, with reference to the village of Gowrie, where cattle disease had broken out, p. 400.
	Villagers of Gowrie, Tajpore, Fuckeerpore, Nundpore.	...	15th May 1870 ...	Evidence recorded by the Cattle Plague Commission. .... p. 400.
	Villagers of Terriah and Bankipoorah.	...	16th ditto ...	Evidence recorded by the Cattle Plague Commission. .... p. 401.
	Evidence of Shew Churn, Zemindar of Siannugger.	...	Ditto ..	Evidence recorded by the Cattle Plague Commission. .... p. 401.
Agra.	*Collector of Agra* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 213. *States that there was no cattle disease in his district during the year* 1868.
	F. M. Lind, Esq., Commissioner, Agra Division.	15*D.*	28*th February* 1870	*Reports no cattle disease in his division in the year* 1870.
	Evidence of Mohasooklall..	...	18th May 1870 ...	Recorded by the Cattle Plague Commission, p. 402.
	Do. of villagers of Pathalee, &c.	...	20th ditto ...	Recorded by the Cattle Plague Commission, p. 402.
Furruckabad.	*Collector of Furruckabad...*	...	23*rd July* 1868 ..	*Selections, Government of India, No.* 69, *p.* 213. *Stating that there was no cattle disease in this district in* 1868.
	C. Daniell, Esq., Collector of Furruckabad.	72	21st February 1870	Forwarding the Commission's Form No. 1 duly filled in, with reference to the Kunnouje and Mohamedabad Tehsils, p. 403.
Etah.	*Collector of Etah* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 213. *Reports great mortality from cattle disease in this district during the end of* 1867 *and the beginning of* 1868.

Index of Records.

Districts.	From whom received.	No.	Date.	Reference and Purport.
Etah—*contd.*	R. T. Hobart, Esq., Deputy Collector, Etah.	227	26th August 1870...	States that diarrhœa and *bedun* are the only diseases prevalent in his district at present, p. 403.
	Ditto ditto ...	247	10th September 1870	Reports a fatal outbreak of disease among the cattle in the district, p. 403.
	Ditto ditto ...	289	18th October 1870	Forwarding the Commission's Form No. 1 duly filled in, with reference to the epizöotic of cattle disease prevailing in the Kasgunge Tehsil, p. 403.
Muttra.	*Collector of Muttra*	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 213. Stating that no cattle disease of an epizöotic nature had appeared in Muttra during the year* 1868.
	B. Hardinge Esq., Magistrate of Muttra.	...	17th November 1870	Reporting the diseases which ordinarily prevail among the cattle of his district, and describing symptoms, p. 404.
Mynpooree.	*Collector of Mynpooree*	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 213. Reporting the existence of cattle disease in Mynpooree in* 1868.
	Ditto ditto ...	237	18*th August* 1868 ...	*Reports that no cattle disease exists in the district.*

HISTORICAL SKETCH.

The information regarding cattle diseases in this Division is meagre. No written record exists prior to 1868, though the oral evidence obtained by the Commission tells the usual tale of periodical prevalence for very many years. HISTORICAL SKETCH.

The replies to the Board's Circular B contain the earliest information on the subject. Both in Mynpooree and Etah, cattle disease, similar to that observed in Hurdui, in Oudh, is reported to have prevailed in the cold weather of 1867-68. In Mynpooree the disease broke out in October, and its symptoms were,—refusal to eat, followed by much diarrhœa and fever, apparently with great thirst, exhaustion, and death about the third or fourth day. This is what the experience of the Commission has taught them to call rinderpest. Goats and sheep are also said to have suffered much. In Etah the disease broke out about the close of the rains. It was considered contagious. The loss was roughly estimated in the Etah Tehseel at five head per village. Sheep and goats also died in numbers. In Agra, Etawah, Furruckabad, and Muttra no cattle disease had been observed.

1867-68.

The next official record of cattle disease is a report from the Furruckabad District, dated 21st February 1870. From this paper it appears that murrain had been prevalent in the district during the two previous years. The symptoms are vaguely stated, and the mortality noted was probably owing to more than one form of disease.

1868.
1869.
1870.

In the month of March 1870 murrain broke out in some parts of the Etawah District. It was called *rog*—plague, and the symptoms were those of rinderpest. On the 15th May the village in which disease was reported to exist was visited by the Commission. Disease was found to exist there and in many neighbouring villages, and to have prevailed in other adjoining parts of the district. The people spoke of it as a familiar and frequent visitant.

The District of Agra had been declared free of disease. The city was, however, visited on the 17th May, and careful inquiry and inspection of cattle resulted in the discovery of three cases of rinderpest, and this disease was also found to be prevailing in some of the villages in the vicinity. The sickness and mortality had not been so severe as to attract the attention of the Civil authorities. The same tale of periodical prevalence was told here as elsewhere.

A report from the District of Etah, dated 20th August 1870, showed that *bedun* (rinderpest) was prevailing at that time. Other diseases of cattle—among them, foot and mouth disease—were said to be of yearly prevalence.

On the 16th of September the existence of a plague' "of a virulent kind" was reported. The symptoms assigned to it point to a severe form of rinderpest.

On the 18th of October the disease was abating. The mortality is put down at 1,384.

No further report was received from this district.

The Collector of Mynpooree reported in August that there was no disease in his district.

From Muttra a report was received in November to the effect that cattle murrain occurred in the district every year, but no specific information as to locality and mortality was given. Foot and mouth disease and *matah* are mentioned as well known diseases.

ETAWAH.

ETAWAH DISTRICT.

Information regarding cattle murrain in the District of Etawah, furnished by the Collector, —dated 22nd April 1870.

A disease called *rog*—plague, has prevailed in the village Gowrie, Police Station Kunchousee, District Etawah, since the 31st of March 1870. In a stock of 92, 37 cattle have been attacked (40 per cent.), 16 have died (17 per cent. of stock and 43 per cent. of attacked), 17 recovered, and 4 are still ill. The disease is considered infectious. Its origin is not known. Its symptoms are,—rough coat; no eruptions; eyes and mouth water; body becomes hot; there is cough at the beginning of the attack, and then laboured breathing; fæcal evacuations are thin and mixed with blood. The disease lasts 6 days. No preventive or remedial measures have been used.

Village Gowrie visited 15th May 1870, 7-30 A. M.

Case. Gowrie is 3 or 4 miles north-east of the Railway Station.

A bullock owned by Rutton Aheer, 6 years old; 10 days ill; off feed; profuse discharge from eyes and mouth and much sticky discharge, mixed with blood, from nostrils; coat staring and the animal is very stupid and weak, and ears drooping; purging yellow oily matter mixed with lumps of blood and mucus; excoriations on the gums and buccal papillæ, with aphtha, on removing which a very raw surface is observed; tongue much furred; breath very offensive; the animal gives a click now and then; coat very rough about the neck and dewlap; skin reticulated and pimply; thirst; not offensive; medicines are being given; prepuce somewhat swollen; the mucous membrane of the nostril much swollen; muzzle seems dry and reticulated.

Case. A female buffalo, 4 years old, belonging to same owner, was seen. It was ill, but has recovered and is feeding; there was, however, running from the eyes, but the muzzle was moist and the animal was ruminating.

Village stock. HURIPROSAD THAKOOR of Gowrie says that there are about 30 families in the village.

Disease *debee* prevailing. There were about 85 cattle in the village, but 22 died of *debee;* the disease appeared in the village a month ago; there is still disease in this place, though it is on the decrease; the plague first appeared in this village; there was no disease in any of the neighbouring places when

Origin unknown. murrain broke out here. Can't say how the disease broke out. [Deponent 50 years old.] I have been here 23 years. I have seen *khoorah* and *gowan*, but I never before saw the distemper

Infectiousness. called *debee*. It is very fatal. It is infectious. The cattle of this village and those of Tazpore

Course of murrain. graze together; 4 or 5 recovered. From this place the murrain has gone to Tazpore, distant about half a mile. We give no medicine, but worship the deity *Sitolah*. We give no food, and the affected animals do not eat anything; the chamars take the skins and sell the

Hides. same to agriculturists, who take them for shoes, &c.; the chamars also send hides to Cawnpore

Agriculture. for sale to the *beparies;* the people have suffered much loss in cattle, but they will find means

Markets. of buying cattle and tilling their lands. The people have generally 1 to 4 head of cattle each;

Prices. the people go to Hurichandpoor, Lahorapoor and Sheogunge markets for their supply of cattle. The animal that cost 10 years ago Rs. 20, costs now Rs. 30 or 35.

Village Tazpore, 4 miles north-east of Paphoond Railway Station.

History. DEEPCHUND ISSURY CHOWDRY, 55 to 75 years old, says,—We have seen the disease several times before, and almost always there is disease in some village or other. The distemper comes

Second attack. in a much severer shape every 3 years, and we know that an animal recovering from one attack has got it a second time; do not consider it to be infectious, since several head of cattle

Mortality in the same herd and house escape, while a few get the attack, during the time the murrain rages; 50 per cent. of the number attacked die.

Source of disease. The distemper is called *checkuck*, and has been in the village for the last month.

Village stock. The sickness appeared first at Gowrie, and then came here. Our cattle graze and mix together. There are 70 or 80 families in this place owning 500 head of cattle, of which 50

Disease in 1867. have died of *checkuck;* the disease is still prevailing here, and 20 or 25 head of cattle are to this day ill. The day before yesterday a buffalo died. Three years ago there was like disease. There

Goats and sheep. are a few goats and sheep in our village; they too get the distemper, but this time not one got the attack; when goats get ill they too have excoriations in the mouth. The chamars take

Hides. the skins and make *mosucks* for water, *poors* and shoes; the chamars sell hides at Sheogunge, Hurichandpoor and Lahora. The disease has never been so bad here as to suspend all

Agriculture. agricultural work and keep the land uncultivated. The price of bullocks has increased. The

Price of cattle. cause of this is that last year in the western districts a large number of cattle died of starvation. The number has thus been reduced. We buy our cattle in the markets of Hurichandpoor and Sheogunge. The village is healthy, as far as human beings are concerned. Never saw or

Cattle poisoning. heard of cattle poisoning.

Village Fuckeerpore, four miles south of Railway Station.

Saw an old cow recovering from disease; had running from the eyes and nose; excoriations of gums and buccal papillæ; having eruptions over neck and ears. Case.

A male buffalo had discharge from nose, eyes, and mouth; mucous membrane of gums and buccal papillæ congested; tied under a tree for the sake of shade; ill for 4 days; purging not set in; feeding. Case.

Village Nundpore, four miles north-east of Paphoond Railway Station.

It is an out-village of Tazpore; contains 10 houses and 128 head of cattle. One hundred were attacked (almost all had disease), 4 died, and 2 are ill. Saw a bullock 7 days ill, very much wasted, offensive discharge from eyes, nose, and mouth; aphtha and excoriation of gums; purging aphthous-looking matter and fleshy masses with streaks of blood; conjunctivæ congested; off feed; no cough; disease has been here for 6 weeks; 2 other bullocks which have recovered are seen, and present, all over the body, a slight scabby eruption. An inhabitant said that all the cattle showed this symptom after recovering; the cattle of Gowrie were first attacked, and then this village. People say that it is spreading westward. Cattle of this village graze with the cattle of Gowrie; disease has gone to Tazpore and Fuckeerpore; the people say that the disease has never been in the village before within their recollection; one man is aged 60. The village has always had foot and mouth disease among cattle. Village stock. Case. Source of disease. Progress. Foot and mouth disease.

Terriah Village visited 16th May 1870, 7-20 A. M.

This village is 4 miles south-east of Paphoond Railway Station.

SHEODYAL, 60 years old, says—The disease called *debee* made its appearance in March last, continued for one month, killed 30 to 40 head of cattle, and then left, travelling to a place called Seraiah, half a mile to the north side of Terriah. The usual symptoms were seen. About 100 head of cattle are kept in the village. The cow of the wife of a chamar was attacked first. The woman was examined as to whether she had taken her cow anywhere before it had the attack, or whether she had received any hides of dead animals. Her reply was that she had not taken her cow anywhere, nor had she received any hides, nor allowed any communication with other cattle before her cow was taken ill. Ten or 15 years ago the village was visited by the same disease, and then 20 or 25 animals died. The recent attack has been severer than the former attack. Have got a couple of carts in the village. Have got one family of Aheers. The carts don't frequent markets. The Bunniahs of Paphoond bring their cattle here and take away the crops. Disease in March. Mortality. Village stock. Disease in 1860.

[*N. B.—En route* to this village, the Commission visited the villages of Patha and Burorah, and found that there was no disease there.]

Village Bankipoorah.

This village is 3 miles from Paphoond, on the road from Paphoond Railway Station to Terriah.

Rinderpest has been in the village for 2½ months. The people had 80 head of cattle—lost 40; one villager, Gume Goorga, had 7, out of which he lost 4. The disease attacked the cattle of this village first, and then went to village of Sianuggur. Within 200 yards of the village a carcass of a buffalo, partially eaten by vultures, was found. The villagers say that the animal belonged to a cartman proceeding to Paphoond, and the animal became very ill, was there left to die, and died yesterday afternoon. The mouth is found entire, also the greater portion of the windpipe; excoriation and aphthous deposits on the buccal membrane, but not on the gums, are found. The lining membrane of trachea was deeply congested, and the upper portion covered within an aphthous pellicle. Rinderpest prevails. Mortality. Case of rinderpest.

Evidence of SHEWCHURN, *Zemindar of Sianuggur.*

This village is 4 miles distant from Paphoond Railway Station. The village contains 12 or 13 families owning nearly 50 head of cattle and buffaloes, of which 20 (5 bullocks, 6 buffaloes, 9 cows) died of *sitlah* or *debee* in this month. The disease has been in this village for the last 15 or 20 days. The symptoms are,—off feed, thirst, no eruptions, coat staring, purging watery stools mixed with blood and mucus, ears drooping, salivation from the mouth, and running from eyes and nose. The affected cattle die from the third to the fifteenth day. The disease at first broke out at Terriah, then it came to Khanpoor; it then travelled to Buncepoor and to our village. The cattle of these villages graze together and otherwise mix together. The disease is considered to be infectious. Deponent is 30 years old, and says that he has never seen a like disease in the village before; but the village gets almost every year in Village stock. Rinderpest prevails. Loss. Symptoms. Source of disease. Progress. Infectiousness.

ETAWAH.

Another disease.

the months of July and August a disease among cattle in which the animal froths from the mouth, gets giddy, and dies in 12 or 24 hours: this malady attacks cattle in good and bad condition alike. At that time the grass in the pasture is abundant, the cattle are daily improving in condition. This disease too travels from one house to another, but the deaths are few, being 4 to 6 on each occasion; no name is given to this disease. It stops in the village from 4 to 10 days. No recoveries from this distemper take place. The animals which are yoked to the plough often do not, as a rule, get the disease; generally, those that are not made to work and are kept tied at home get it. The affected animals keep their nose extended, their neck straight out, have a difficulty in breathing, their eyes bulge out of their sockets, and they belch a good deal. The animals get swelled belly. The disease called *khoorpucca* appears in the village now and then, but it is not fatal. The clefts of the hoof are affected first, and then the mouth. The chamars take the skins and make shoes and *poors*. There are no sheep or goats in the village. Heard from his father that there was disease in his village formerly, but he did not see it; but the present outbreak is said to be more severe than that in his father's time. There are no carts in the village; the cattle dealers come to this village yearly and sell their cattle; the village is close to the high road; the people never sell to the *beparies*. The bullocks are more in number than cows, the proportion being 2 to 1. If people do not buy cattle from the dealers every year or every 2 years, the number of animals kept up in the village would be reduced, for the cows are few and the breeding does not keep up the number. There are no regular bulls kept in the village, but the entire bullocks (*nulcole*) serve the cows. No small-pox nor cholera has appeared in the village this year; last year also the village had not these diseases.

Symptoms.

Foot and mouth disease.

Hides.

Previous disease.

Breeding.

AGRA.

AGRA DISTRICT.

Mohasook Lall.

Statement of MOHASOOK LALL, *dated Agra, 18th May* 1870.

MOHASOOK LALL, of Tehseelee Agra, states,—I have visited the villages of Madakoor, &c., and there I learnt that the disease called *matah* was prevailing amongst the cattle. The symptoms are,—that the cattle throw *ral* from mouth, nose, and eyes; purge; off feed; breath offensive; blisters are seen all over the cheeks and mouth and throat. The disease is contagious; as a general rule, the cattle that lie together or close by the sick, particularly those that eat the remnants of the food of the sick, always get the disease. The disease is not a new one; it has always been seen in the country; slight attacks are seen here and there throughout the year, but the severe attacks occur after three or four years. Baloo and Mokunda Aheers depose as above.

Symptoms of prevailing murrain.

History.

The skins are taken away by the sweepers, who sell them to the chamars, who after preparing them take them to the Railway Station, and thence forward them on to their own country.

Evidence obtained in some villages in the neighbourhood of Agra, dated 20th May 1870.

Village Pathalee.

Disease prevailing.

HURCHUND, PROLAD, and KIRATRAM, &c., of the village of Pathalee, 4 miles from Agra, and 100 yards from the high road, state that they have seen disease called *seetlah* in their village during the last three months: one man had lost 4 bullocks, and altogether 12 head of cattle had died. The symptoms were,—off feed, blisters in the mouth, great thirst, purging blood, discharge from eyes and nose, and difficulty in breathing. The cattle died within 10 days after seizure. The first animal that died belonged to Subha Kumur. The chamars of this village clean the hides, which we take back from them after paying for their labor. We use the hides for taking water out of wells. About 30 or 35 years ago this village was attacked with a similar disease, which was severer than this; that year some land remained fallow. This year as yet there is no fear; but should the disease continue, we are apprehensive that the same may happen again.

Symptoms.

Hides.

Disease 30 years ago.

Agriculture.

Price of cattle.

Cause of increase.

Contagiousness.

The price of cattle has risen to four times what it was, because cattle have become scarce and the press of cultivation great; great numbers of cows are also slaughtered. We sometimes buy our cattle from Agra, Mugton, and Bellora. We consider the disease contagious. This disease *seetlah* generally attacks the young and well-conditioned cattle; all the cattle which we have lost have been young and fat, while the old cattle were not attacked. Before the disease appeared in the village the cattle used to go and graze with others, but since the disease has broken out, none of the neighbouring village cattle are turned out with our cattle, nor are our cattle permitted to go to other villages. Our neighbours are displeased if we allow our cattle to mix with theirs. There is no disease in the neighbouring villages at present. We cannot say from what direction the disease came.

Segregation.

All sick cattle that are attacked with blisters in the mouth and blood purging generally die. In this village all those cattle that had the disease (*seetlah*) died.

Case.

A buffalo was shown just recovering from the disease. It was very weak and the hair and cuticle could be removed by hand. There was a blistered condition of the mouth, tongue, and cheeks; the buffalo was in calf when first attacked, but subsequently aborted. The teeth are loose in their sockets.

AGRA.

MOHUN, GONESH, HITA, BHOOBUN, SEETARAM, AND BIDHEE, of Madakur, depose that the disease *matah* has visited their village three times previous to this, and was always very severe; it is contagious; the symptoms as usual. At Ungothee, the bullock of Tata is sick with small-pox for the last four days. At Rampore, the bullock of Ramchund is sick with *seetlah* for last three days; the disease has just broken out. The above villages are situated in the Maunpoor road.

Village Madakur.

Villages Ungothee and Rampore.

FURRUCKABAD DISTRICT.

FURRUCKABAD.

From C. J. DANIELL, Esq., *Collector of Furruckabad, to the President of the Cattle Disease Commission,*—(*No.* 72, *dated the* 21*st February* 1870).

C. J. Daniell, Esq.

With reference to Circular No. 55A of 1869, from Government, North-Western Provinces, dated 28th December 1869, I have the honor to forward a set of questions and answers relating to what the natives of the place believe to be an outbreak of murrain among the cattle in some parts of this district.

Statement (*abridged*).

A disease called *gardooa* or *palia* has prevailed in the Tehseelee Kunnauge since September 1868. Of 5,125 cattle attacked, 2,830 have died, or 55 per cent., and 2,295 recovered. It is considered infectious; the cause is not known. The symptoms are:—the eyes and mouth water, the body is cold, there is cough and laboured breathing, the throat swells. Animals died in 8 or 9 days. Diseases called *pacca* and *jurra* prevailed also in the Mohumadabad Tehseelee in 1869. Of 259 attacked, 250 died, or 96 per cent., and 9 recovered. The symptoms assigned are the same as those given above. Fumigation with the smoke of burning straw was practised, and in *pacca* (foot and mouth disease) the feet were fomented with the fermented juice of the sugarcane or *mowah* flowers.

ETAH DISTRICT.

ETAH.

From R. T. HOBART, Esq., *Deputy Collector, Etah, to the President, Cattle Plague Commission,*— (*No.* 227, *dated* 26*th August* 1870).

R. T. Hobart, Esq.

In reply to your No. 435, dated August 1870, I have the honor to inform you that none of the species of disease mentioned in your letter seem to be prevalent here.

There is but little sickness at present among cattle. Diarrhœa and *bedun*, a bleeding at nose and anus, seem to be the only diseases prevalent at present; but there are several diseases which are prevalent yearly more or less, *viz.*, *munh pukka* or sore mouth; *jurra*, a sort of cold with flowing from the nose; *rog*, or swelling of the belly, accompanied with foul-smelling dung; *khoorpaca*, or foot rot; and *ghoorooa*, or swelling of neck and belly. *Rog* is the most fatal of these diseases.

From R. T. HOBART, Esq., *Deputy Collector, Etah, to the President, Cattle Plague Commission, Calcutta,*—(*No.* 247, *dated* 16*th September* 1870).

I have the honor to inform you that a plague of a virulent kind has broken out in this district. It is said that diarrhœa first takes place; then the cattle give up eating, the mouth gets watery, swollen, and offensive, and maggots attack the anus and private parts. No specific name has been given. The disease has hitherto been fatal.

From R. T. HOBART, Esq., *Deputy Collector, Etah, to the President, Cattle Plague Commission, Calcutta,*—(*No.* 289, *dated* 18*th October* 1870).

I have the honor, in reply to your No. 478, dated 21st September, to state that I shall be able in a few days to furnish you with a clear answer to that letter, as the Civil Surgeon of the Station will have an opportunity of diagnosing the disease. You will be happy to hear that the malady is fast abating. It seems to have begun in May last, but to have attained no dimensions till September. It originated in a village on the banks of the Ganges and spread west, but confined itself to one-third of this district.

Owing to the season of the year, the enforcement of segregation by officials was impracticable; efforts are being now made with this view.

Appended statement (*abridged.*)

The disease *bedun* has prevailed in the Kasgunge Tehseel since May 1870. The stock is estimated at 134,000; of 1,800 cattle attacked (1·3 per cent. of stock) 1,388 died (1 per cent.

ETAH.
R. T. Hobart, Esq.

of stock and 77 per cent. of attacked), 251 recovered, and 165 are still ill. The disease is infectious; origin unknown. The symptoms are,—coat mangy, eyes and mouth water, body hot, ears droop, breathing laboured, shivering, blood mixed with evacuations, duration 3 days. No successful remedy has been found.

MUTTRA.

MUTTRA DISTRICT.

R. T. Hardinge, Esq.

From B. HARDINGE, Esq., *Magistrate, Muttra, to the President of the Cattle Plague Commission, Calcutta,*—(*No.* 354, *dated* 17*th November* 1870).

I have the honor to acknowledge your letter No. 441, dated 15th August last, calling for recent information on the subject of the prevalence of cattle disease in this district.

2. From inquiries made in the different parts of the district, it appears that the diseases noted in the margin are those that are common among cattle, and it has been ascertained that some of them, *viz.*, *tupea* or staggers, and diarrhœa, attended with *hoven* or *blown*, recur annually during the months of August and September; but they are generally confined to a few localities only.

1. Moopacca.
2. Khoorpacca.
3. Matta.
4. Diarrhœa.
5. Tupea.
6. Ghurka.

3. The principal of these diseases are *moopacca* or sore-mouth, and *khoorpacca* or bad hoofs. In the former case the mouth gets inflamed and ulcerated, and the cattle are unable to graze; large quantities of saliva pour from the mouth, and the animal speedily sinks from want of nourishment. *Khoorpacca* or bad hoofs is the next most common disease. *Matah* or cow-pox appears seldom, and unless developed in an epidemic form, which it rarely takes, causes but little loss. *Ghurka* or inflammation of the throat is a disease of the ordinary type, and appears to be easily curable.

MEERUT DIVISION,

COMPRISING THE DISTRICTS OF MEERUT, BOOLUNDSHAHAR, SAHARUNPORE, MOZUFFERNUGGUR, ALLYGURH, AND DEHRA DOON.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	No.	Date.	Reference and Purport.
	Historical Sketch ...	...	...	Page 407.
Meerut.	*Collector of Meerut* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 209. *Stating that khoora is the only form of cattle disease in his district, and describing symptoms and treatment.*
	W. C. Plowden, Esq., Collector of Meerut.	178	9th May 1870 ...	States that there was no cattle disease of an epizöotic nature in his district in 1870, but that foot and mouth disease prevailed to some extent in March, p. 409.
	Ditto ditto ...	246	4th July 1870 ...	Forwarding a report from the Tehsildar of Haupper, that cattle disease (rinderpest) had broken out in the village of Dhanowra, and that about 10 cattle had died of it, p. 409.
	Evidence of villagers of Dhunowra.	...	28th July 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 409.
	Collector of Meerut ...	287	31*st August* 1870 ...	*Reports that cattle disease had broken out at Pirnuggur.*
Boolundshahar.	*Collector of Boolundshahar* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 210. *States that the cattle of his district generally suffer, from November to January, from a species of influenza accompanied by diarrhœa.*
	H. D. Willock, Esq., Officiating Collector of Boolundshahar.	271	28th April 1870 ...	Reports that cattle disease has lately broken out in a few villages of his district; and applies for instructions for treatment, p. 409.
	Ditto ditto ...	338	30*th May* 1870 ...	*Forwarding a description of the places where cattle disease has broken out.*
	Ditto ditto ...	...	from 31st May to 23rd Dec. 1870.	Fortnightly returns showing the prevalence of cattle disease, p. 410.
	Visited village Chundpore	...	12th July 1870 ...	Evidence and observations recorded by the Commission, p. 411.
	Ditto Yakoobpore ...	...	13th ditto ...	
	Ditto Jawlinghur ...	...	Ditto ditto ...	

Index of Records.

Districts.	From whom received.	No.	Date.	Reference and Purport.
Saharunpore.	*Collector of Saharunpore...*	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 209. Stating that the common cattle disease called "seer" or "rorah" or "rorh" was unusually virulent in his district during the latter part of last rainy season.*
	E. G. Jenkinson, Esq., Collector of Saharunpore.	206	21st May 1870 ...	Forwarding the Commission's Forms duly filled in, with regard to the villages of Tataheri, Jhundhera, and Dhorala, p. 412.
	Ditto ditto ...	318	3*rd August* 1870	*Forwarding a statement reporting the existence of cattle disease in 22 villages of his district.*
	Evidence of villagers of Reeree.	...	2nd August 1870	Evidence recorded by the Commission, p. 412.
Allyghur.	*Collector of Allyghur* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 210. Stating that there was no cattle disease in his district in* 1868.
	H. M. Chase, Esq., Magistrate of Allyghur.	482	11*th July* 1870 ...	*Forwarding the Commission's Form No. 1 duly filled in, with reference to Pergunnahs Khyr and Chundous where cattle disease prevailed.*
	Ditto ditto ...	210	14th July 1870 ...	In continuation of the above, reports the disappearance of cattle disease, p. 413.
	Ditto ditto ...	227	22*nd July* 1870 ...	*Report to the Commissioner of Meerut on the same subject.*
Mozuffernuggur.	*Collector of Mozuffernuggur*	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 209. States that cattle disease generally occurs to a certain extent at the close of the rains, but that there has been no complaint of extraordinary sickness during the past year.*
	G. Palmer, Esq., Officiating Magistrate of Mozuffernuggur.	398	10*th November* 1870	*Forwarding Mr. Halkett's report on cattle disease.*
	D. C. Halkett, Esq. Joint Magt., Mozuffernuggur.	...	9th November 1870	Submitting a report on the subject of cattle disease in the District of Mozuffernuggur, p. 414.
Dehra Doon.	*R. Manderson, Esq., Superintendent, Dehra Doon.*	53	9*th March* 1864 ...	*Reports that burra rog (rinderpest) and rorah (foot and mouth disease) occasionally attack the cattle of his district, and records symptoms and treatment.*
	Ditto ditto ...	...	...	*Selections, Government of India, No. 69, p. 208. States that cattle disease does not exist in his district at present, but that it occasionally breaks out, chiefly in the hot and rainy seasons.*
	H. G. Ross, Esq., Superintendent of Dehra Doon.	301	25th November 1870	Describes the diseases of cattle prevalent in his district, p. 414.

HISTORICAL SKETCH.

The earliest account of cattle murrain in this Division is that furnished by F. Williams, Esq., Superintendent of Dehra Doon, who writes in March 1864. After describing the disease called *burra rog*, which, he says, resembles the Madras disease, and detailing the symptoms, which are those usually referred to rinderpest in this country, he states that the disease appeared in the Doon and Jounsar Bowur in 1862. In the same year a similar disease broke out among the elephants in Dehra and proved very fatal. Another disease called *rorah* is also described, to which the symptoms known to belong to foot and mouth disease are assigned. Both diseases are considered contagious, and the natives thought that they had got worse of recent years, owing to crowding and massing cattle together; accordingly, when disease appeared, they drove their cattle as far into the jungle as possible. Information of more recent date is contained in the replies of the several Collectors to the Board of Revenue's Circular B. The Superintendent of Dehra Doon reports that the disease prevailed in 1867 in two villages, one in Eastern and one in Western Doon. The same symptoms are assigned and the name *waha* given. Well-conditioned cattle are said to be more liable to attack. He states again that the people practise segregation.

HISTORICAL SKETCH.

1862.

1867.

The Collector of Saharunpore reports that the cattle disease called *seer*, *rorah*, or *rorh* had been "unusually virulent" in his district during the latter part of the rainy season. The mortality as given by the Tehsildars is marginally quoted, but the Collector does not place much reliance upon their statements. The disease had spread all over the district, and the Collector was aware of its existence for years past.

Tehsils.		*No. of deaths.*
Saharunpore	...	2,499
Roorkee	...	2,269
Deobund	...	12,408
Nukoor	...	7,700
Total	...	24,876

The Collector of Mozuffernugger states that disease generally occurs towards the close of the rains. The symptoms described are those of rinderpest. In October 1867 about 10 per cent. of the cattle of the district died.

The Collector of Meerut states that *rorah*—foot and mouth disease—is the only form known in his district. He, however, gives under this name some of the symptoms belonging to rinderpest. The disease, he says, is infectious, and prevails from August to the end of September. In 1867, in one village of Burnawa Pergunnah, 200 cattle died in two months. He also mentions that in 1866 large numbers of sheep had died of a distemper, the nature of which he did not know.

The Collector of Boolundshahar states that from November to January cattle suffer from "a species of influenza accompanied by diarrhœa." The Collector of Allygurh states that there has been no cattle disease in his district.

The next series of reports regarding cattle diseases in this Division was elicited by the circulars and queries of the Commission. The districts of Meerut, Boolundshahar, and Saharunpore were also visited by the Commission and much valuable information thus obtained.

In May 1870 the Collector of Meerut reported that foot and mouth disease had prevailed in March. In June the Tehsildar of Haupper reported that disease had broken out a month before in the village of Dhanowra; the symptoms described are those of rinderpest: 10 cattle had died in the village. This village was visited on the 28th of July, and satisfactory evidence was obtained regarding the present and past prevalence of rinderpest. In August another report was received from this district regarding a village, Pirnuggur, in the Gurmooktessur Pergunnah, in which rinderpest had prevailed for 15 days. On the 28th of April the Collector of Boolundshahar forwarded a return showing that cattle disease was very prevalent in the district.

1870.

HISTORICAL SKETCH.

This disease was called *khurpucca*, but the description of it and the mortality attributed to it showed that many of the cases must have been cases of rinderpest. This surmise was verified by the Commission on the occasion of their visit to the district in July. Fortnightly returns of the prevalence of both diseases have been regularly received since then up to the 15th December 1870; both these diseases appear to have been prevalent throughout the district, and the Collector has attached greater credit to the later than the earlier figures furnished by his subordinates in the Revenue Department.

Disease was also widely prevalent in the Saharunpore District during this year. It appears to have commenced as early as December 1869 in some villages, and a return furnished by the Collector on the 3rd of August shows its prevalence in 22 villages of the Pergunnahs of Roorkee, Jowalapoor, and Nulloor. Two forms of disease are specified—*maind* or rinderpest and *sedh* or foot and mouth disease; but in the returns the two forms are evidently mixed up together, and their value is accordingly much impaired. They show a mortality of 1,184 in a stock of 10,746, or 11 per cent. The principal symptom assigned is dysentery. This district was visited by the Commission on the 2nd August, and the disease *maind* or *rorah* identified as rinderpest. Several cases were examined and animals examined *post mortem*.

The Collector of Allygurh reported (11th July 1870) that the diseases *khurpucca* and *moopucca*—foot and mouth disease—prevailed in the Pergunnahs of Chundous (9 villages) and Khyr (11 villages) in the Khyr Tehseeldari, in the north-west of the Allygurh District, since the end of May 1870. In a stock of 2,075, 1,535 cattle had been attacked (74 per cent.); 369 had died (17 per cent. of stock and 24 per cent. of attacked); 1,166 had recovered.

The disease was considered infectious, and the symptoms assigned are a mixture of those of rinderpest and foot and mouth disease, showing that both forms prevailed simultaneously.

The disease was reported to have disappeared on the 22nd of July.

A careful report on the subject of cattle diseases in the District of Mozuffernuggur is printed in the sequel, showing that both rinderpest and foot and mouth disease are well known in the district and frequently prevail.

The Superintendent of Dehra Doon, in a letter, dated 25th November 1870, describes *burradook*—rinderpest—and sore feet as the diseases of cattle known in that district.

DISTRICT OF MEERUT.

MEERUT.

From W. C. PLOWDEN, Esq., *Officiating Collector, Meerut, to the President, Cattle Plague Committee, Cawnpoor,—(No.* 178, *dated 9th May* 1870). W. C. Plowden, Esq.

I have the honor to inform you, in reply to your No. 241, dated 25th ultimo, that there is not any cattle epidemic prevalent in this district.

2. In March, however, it is stated by the Tesheel Officers that there was a slight amount of mouth and foot disease, which has now ceased.

From W. C. PLOWDEN, Esq., *Officiating Collector, Meerut, to the President, Cattle Plague Committee, Cawnpoor,—(No.* 246, *dated 4th July* 1870).

Cattle Plague in Mouzah Dhunowra, Pergunnah and Tehseel Haupper.

With advertence to No. 241, dated 25th April last, forwards for his information copy of a petition from the Tehseeldar of Haupper reporting on the outbreak of the above.

Translation of the petition of the Tehseeldar of Haupper, Zillah Meerut, dated 17th June 1870.

To-day Khooshal, shareholder of Mouzah Dhunowra, Pergunnah Haupper, appeared and stated that about a month since the cattle disease has broken out in his village, the nature of the sickness being that for the first five days the animal takes no food nor water, and after suffering for five days more from blood purging it dies; that about 10 cattle have died of this disease and about as many more are suffering from it in his village.

Village Dhunowra, 3 miles north of Haupper, visited 28th July 1870.

Disease first appeared in Baisakh (May). The last death occurred last night. About 70 cattle have died during the outbreak, of the value of about Rs. 2,000. The disease is called *vedun* or *bedun*. *Vedun* or *bedun* (rinderpest) prevailing. Deaths.

Twin-brothers HAR SAHAI and GUNGA SAHAI, age 35 years, belonging to Dhunowra, had about 40 or 42 head of cattle, of which 4 were attacked (1 bullock and 3 buffaloes) with *bedun*; all attacked died within two to five days. Symptoms:—the sick animal begins to walk round and round, as if drunk; we did not notice whether they walked to the right or to the left. After walking about for an hour or two the animal lies down, and after a time gets up and walks about again, and again lies down, selecting a cool place to lie in. This continues for about 4 days, while the eyes become bloodshot and a slight discharge comes from them. Little or no discharge comes from the mouth, but the gums become sore and raw, and the breath becomes very offensive. Purging commences about the second or third day, is very violent and watery, and mixed with blood, with a very great stench, even at the distance of 5 or 6 yards. There is a mixture of yellowish-white matter with the blood of the stools. Cases. Duration. Symptoms.

Ghee mixed with *maindi* was tried as a remedy, but with no success. Medicine given without success.

The witnesses volunteered the following statement:—Had we not separated the healthy animals from the diseased, the disease would have spread still further. Instances occurred in which healthy cattle got loose and went among sick cattle, and so caught the disease and died. Every animal attacked with the disease in our village died, without exception. The disease was brought to our village in Phalgun (February) by a cattle dealer who brought five bullocks for sale; he stayed two hours. Lukhoo, a man of this village, purchased one bullock for Rs. 45; this bullock was observed to be ill the next day, and remained ill for 7 or 8 days, and then recovered. A bullock which was put to work as a pair to this sick one, and was tied alongside of it in the cow-house, got ill, and in two or three days died. After this, Lachoomun Dass's bullock got ill and died; his house is close to Lukhoo's; we have never before had this disease in our village, nor heard of its being here. Segregation practised. All attacked have died. Disease was brought by a cattledealer in February. He sold one bullock to a villager; this became ill the next day. Mode of spread.

We have had foot and mouth disease, but the cattle do not die of this disease, with very rare exceptions. *Bedun* never occurred in this village before.

MUNNA, age 60 years, states that about 30 years ago a disease similar to this appeared in this village Dhunowra, and about 10 to 12 cattle died; still other villagers state that they have not heard of the disease before. A disease similar to *bedun* occurred here about 1840.

The disease has spread to the village of Mullickpore, about 4 miles north-east of Dhunowra. Disease has now spread to a village four miles off.

DISTRICT OF BOOLUNDSHAHAR.

BOOLUNDSHAHAR.

From H. D. WILLOCK, Esq., *Officiating Collector of Boolundshahar, to the President of the Commission deputed to inquire into the subject of Cattle Disease,—(No.* 271, *dated* 28th *April* 1870). H. D. Willock, Esq.

I have the honor to report, with reference to a circular letter received from the Government of the North-Western Provinces, enclosing a copy of your letter No. 101 of the 6th December 1869, regarding future outbreaks of cattle disease, that an epidemic has lately appeared among

BOOLUNDSHAHAR. H. D. Willock, Esq.

the cattle of a few towns of this district, which appears to me to be akin to that of the disease which has lately been raging in Bengal. Very few cattle appear to have been carried off, and the disease does not appear to have assumed a malignant form. The peasantry do not seem to have been alarmed by its appearance, and no official reports of its having broken out reached this office. I became aware of its existence by accidentally coming across a dead bullock in a morning ride, and on inquiring the cause of death, was told that an illness for which the people had no name had lately appeared and had attacked several of the cattle of the village. Inquiries showed that such a sickness as was described had passed through a few villages in the neighbourhood, but that few cattle had been carried off.

2. The Tehseeldars were directed to call upon Village Putwarees for reports of outbreaks. They had previously been furnished with translations of your questions.

3. The accompanying return shows the result up to date.

4. I place no faith in it, as I feel sure that the disease has spread now generally through the district, and I believe that the Putwarees having paid no attention to the instructions received in the first instance, have concealed facts which have come to their knowledge, though few. At the same time, as before stated, the disease has not made much way and has not alarmed the people.

Segregation.

5. My chief object in writing is to apply for instructions for treatment which I would make known to the people; I presume the first direction would be to have sickly cattle placed apart from others and to be detained in their sheds. I am afraid this advice would not readily be acted upon. The whole cattle of a village are made over to the care of a few lads who graze them together, no attention being paid to any disease from which any of the cattle are suffering. On one occasion I found a bullock apparently suffering from the complaint herded with others, while no dissatisfaction was expressed by the owners of the rest of the cattle on the score of the danger of infection. A few simple instructions and remedies would be gladly received. I find that the people use the extract juice of the *babool* tree (acacia arabica) which is used by tanners in preparing skins. It is given as a drink; the eyes, nostrils, mouth, and swollen hoof are also watered with it.

6. The disease is supposed to be infectious.

7. I can get no intelligent opinion on the question of how the disease originated. The people ascribe it to the prevalence of "bad wind," and this is the only reply I can get.

8. The descriptions I have received of symptoms are not satisfactory. Fever, discharges from the eyes and mouth, and swelling of the throat are those usually noted. The average duration of the disease is 11 to 15 days.

9. I may add that the disease is spoken of as *khoorpucca, i. e.*, foot swelling.

Summary of Return of Cattle Disease from Boolundshahar.

Date of Reports.	Rinderpest or Bedun.		Foot and Mouth Disease, or Khoorpucca and Moopucca.		Total mortality.	No. of cattle in affected villages.
	No. attacked.	No. died.	No. attacked.	No. died.		
1st to 15th May ...	...	...	...	...	62	8,801
16th to 31st „ ...	...	...	...	...	155	6,318
1st to 15th June ...	...	...	...	...	93	12,294
16th to 30th „ ...	...	...	...	...	42	18,272
1st to 15th July ...	459	165	215	10	175	19,309
16th to 31st „ ...	781	421	255	17	438	27,997
1st to 15th Aug. ...	744	384	267	12	396	22,755
16th to 31st „ ...	804	525	214	57	582	31,069
1st to 15th Sept. ...	704	362	323	58	420	27,354
16th to 30th „ ...	572	283	214	13	296	20,236
1st to 15th Oct. ...	553	317	119	35	352	17,831
16th to 31st „ ...	564	382	94	30	412	16,558
1st to 15th Nov. ...	413	177	30	12	189	5,974
16th to 30th „ ...	479	237	99	32	269	7,559
1st to 15th Dec. ...	379	145	81	32	177	8,023
16th to 31st „ ...	620	380	127	49	429	15,141
Total ...	...	...	..	...	4,477	265,491
Total from 1st June...	7,072	3,778	2,098	357	4,135	219,806

Remarks.—This table has been constructed from the fortnightly returns obtained by the Collector from the several tehsils of the district. In the earlier returns the two diseases were not shown separately; in late returns, after the Commission had visited the district, they are carefully kept apart. The result as regards mortality is as follows:—

Rinderpest gives 53· deaths per cent. of attacked, and foot and mouth disease 12·. The percentage of stock lost by both diseases is little more than one; but the figures representing stock are probably fanciful and unreliable, and this result cannot be accepted as of much value.

Village Chundpore, visited 12th July 1870. BOOLUNDSHAHAR.

Saw three cases of *khoorah* and one case of *gootee*, known by the name here *vedun;* both diseases have been known from time immemorial by the villagers. Cattle affected with *khoorah* do not die, those affected with *vedun* often die. Two out of five attacked in this village have died. Cases. *Khoorah.* *Vedun* (rinderpest).

The symptoms of *vedun* in one case now seen by the Commission are those of rinderpest. *Vedun* shows itself in this village every third or fourth year; sometimes is mild in form, other times very malignant; when mild, not more than 10 per cent. die; when severe, about 30 per cent. die: cattle seldom die from *khoorah*. They never purge when they have *khoorah;* but they sometimes become very weak from their mouth and feet becoming flyblown and having maggots, and they then die from pain and want of food from not being able to eat. The villagers do not believe the disease *vedun* is contagious. For instance, a man, by caste *Talee*, named Ramjan, has 4 head of cattle in his shed, and only one of them has been affected. Again, in another man's house there are 3 head of cattle, and all three became affected; two have got well and one died. They do not know whence the disease comes, but a high road passes by the village. When it breaks out every third or fourth year, it sometimes breaks out in a neighbouring village, and when that village gets rid of the disease, then it breaks out in this village or another neighbouring village. When our village cattle are affected, and cattle from a neighbouring village mix with them at pasture, the disease sometimes breaks out among the cattle of the neighbouring village. Symptoms: *vedun* occurs every 3rd or 4th year, sometimes of mild, sometimes of malignant type. Mortality from *vedun*. *Khoorah*. Mortality. Symptoms. *Vedun* is not considered contagious. Origin of outbreaks.

The disease appears more frequently in May, June, July, and August, especially during the two latter months. The disease *vedun* is known to attack the animal more than once, say after a lapse of several years; but *khoorah* may attack the same animal annually. The *chamars* take off the skins of the dead animals, and the skins are taken to Meerut and other places to be tanned. They have heard of another disease called *chuckee*, and remember that a man, by name Kaisree, lost two bullocks ten years ago from this disease. The villagers think there are 400 houses and 300 head of cattle in their village. They never give medicine to sick cattle. Occurs more frequently in the months of May, June, July, and August. *Vedun* may attack cattle a second time. *Khoorah* may attack the same animal annually. Hides taken to Meerut. Another disease, *chuckee*. Medicine is never given to sick cattle.

Village Yakoobpoor, visited 13th July 1870, 6 A. M.

This village is 5 miles south of Boolundshahar. JHUNDA SING states,—The disease called *vedun* first attacked the cattle of this place 20 days ago, but the disease appeared before in the village of Dhatora, 2 miles south-east of this, and it is believed 20 or 25 died there. Our cattle when at pasture mix with those of Dhatora. We believe *vedun* to be contagious. The villagers have seen an animal attacked once get the disease once or twice again. Two cases of *vedun* are seen by the Commission. *Vedun* prevailing. Appeared first at a village 2 miles off. The cattle of both villages mix at pasture. *Vedun* is considered contagious.

No. 1, a buffalo, age 10 years, having a cow calf of 8 months. The symptoms are well marked. The buffalo cow has a sticky discharge from nose, eyes, and mouth; eyelids much swelled from subcutaneous effusion; the gums and buccal membrane are deeply congested, and there are several aphthous ulcers; the breath is very offensive; the animal experiences great difficulty in swallowing; is very weak; has been purging for 5 days; the stools are watery and dysenteric. She stands with her head depressed and nose poked out; her eyelids are semi-closed, and she is troubled with flies about the eyes and nose. She has no thirst at present, but three days ago she drank the usual amount of water; no eruptions on the skin. The villagers state that they have never seen or noticed eruptions on the skin of animals affected with *vedun*. Cattle have been seen to have a second attack. Case. Symptoms.

No. 2. The calf has been 3 days ill; head turned to the right flank; in pain; lying down; mucous membrane of the mouth deeply congested; discharge from the eyes and nose, but no ulceration. Purging has not set in, but the owner states that she will surely have it the day after to-morrow. Case. Symptoms.

No. 3. Another buffalo cow, 12 years old, affected 8 days; showing well marked symptoms of rinderpest (*vedun*), especially the aphthous ulceration of the gums and buccal membrane. The nose is covered with viscid discharge and many flies. The owner, named Mahtab, states that he owns 5 head of buffaloes, of which one is now seen by the Commission, and two others have recovered, and the remaining two are still sick. The first cattle-sheds of the village attacked were that of Nehal and Kulna, and then the disease spread to the adjoining houses of Tulla and Quiren. No remedial measures are adopted, except catching and killing jackals and burying them on the pasture lands; tiger's flesh is burnt and the smoke is made to enter the nostrils of the sick animals. They give also barley and rice gruel. The villagers state that this disease attacked their cattle formerly every third or fourth year. The price of cattle is now increased. For the last three years the disease has prevailed more or less all the year round, but most cases are seen during the rains. Case. Symptoms. Mode of spread of the disease. Remedial measures. Value of cattle. *Vedun* prevailed for last three years all the year round.

Village Jawlinghur, visited 13th July 1870, 6 P. M.

This village is 7 miles south-east of Boolundshahar. The disease first appeared in this village a month ago. It had affected cattle in all the neighbouring villages, but it first appeared in the Derah village, about half a mile east. About 40 of the cattle have been taken ill, out of which 25 have died. Four now sick are brought before the Commission. Disease first appeared a month ago in this village: prior to that in Derah village, half a mile off. Statistics.

BOOLUNDSHAHAR. Case. No. 1, bullock; condition fair; age 9 years. The symptoms are,—water from the eyes, mouth, and nose; slight excoriations of the gums and buccal membrane. Has been sick for the last 6 days; passes dysenteric stools; aphthous deposit around the openings of sublingual ducts; tongue very much furred; breath and purging very offensive.

Case. No. 2, six years old bullock; condition fair; six days ill: extensive aphthous ulceration of the gums and buccal membrane, and the floor of the mouth around the mouths of the sublingual ducts; dysenteric purging; slight eruptions on the shoulders and ribs.

Eruptions.

Case. No. 3, bull, 18 months old: recovering, but still purges and is very weak; has been eight days sick; aphthous ulcers on the gums, cicatrizing; is feeding.

Case. No. 4, bullock, seven years, five days ill: intense congestion of the gums; off feed; has been purging for the last two days; there is a slight excoriation of the near corner of the mouth.

Redun prevailed in this village in 1845. *Khoorah.* Hides. No medicine for *redun.* MUNGLEE, a cattle owner, states that he saw this disease *redun* in this village 25 years ago, when he lost himself 20 head of cattle. *Khoorah* disease is frequently met with, but cattle do not die of it. The chamars take the skins and make shoes and buckets, &c., &c. I know of no particular medicine for *redun.*

DISTRICT OF SAHARUNPORE.

SAHARUNPORE. E. G. Jenkinson, Esq. *From* E. G. JENKINSON, Esq., *Collector, Saharunpore, to the President, Indian Cattle Plague Commission,—(No.* 206, *dated* 21*st May* 1870*).*

With reference to Government Circular No. 55 A of 28th December last, begs to forward three copies of a form containing questions regarding cattle murrain duly filled up.

Appended statement (abridged).

Cattle murrain, called *maind,* has prevailed since the middle of December 1869 in Tataheri and Jhundhera, Pergunnah Gungoh, and since the 10th of March 1870 in Mouzah Dhorala, of Pergunnah Nukoor. The disease is called *sedh* in the latter. The statistics are as follows:—

Locality.	Village stock.	Number attacked.	Number died.	Number recovered.	Number still ill.
Tataheri	180	60	35	19	6
Jhundhera	94	51	36	15	...
Dhorala	554	200	25	52	123
TOTAL ...	828	311	96	86	129

The percentage of stock attacked is,—*maind* 40 and *sedh* 56; deaths among stock,—*maind* 26 and *sedh* 4·5; and among attacked, *maind* 64 and *sedh* 12·5. The disease is considered infectious. *Maind* appears from the symptoms assigned to it to be rinderpest, and *sedh* foot and mouth disease.

Village of Reeree, 4 miles north-east of Saharunpore, visited 2nd August 1870.

Case of rinderpest. Symptoms. Eruptions. Saw a buffalo cow calf, 13 months old, 15 days ill. Mucous membranes healthy, but pallid; *pustular* eruption on belly, udder, inside of thigh, armpits, especially on near side—the side on which she has evidently been lying; pustules also on the fetlocks; muzzle dry and fissured.

Pustules. The skin all over the body is, as the natives say, peeling off. There are several pustules, and inside the off-thigh is a very well marked pit. The cuticle is in a state of desquamation all

Cuticular desquamation. over the body. Here and there are pieces of scab-like cuticle, and of such a size and shape as to lead one to expect that on removing it a pit will be found. These are pretty firmly attached, and when removed, expose a pale surface of skin. Purging slightly, but no blood

Five cases. is passed. Vagina not congested. Five more cases of buffaloes were examined, and well

Symptoms. marked symptoms of rinderpest were found,—excoriation of the gums with aphthous deposit; buccal membrane excoriated, and in one or two cases offensive breath; tongue very much furred; dry muzzle; discharge from eyes and nose; dysenteric purging in one or two cases; large clots of aphtha, of the size of a half-crown piece, were found in the stools; the mucous membrane of the vagina deeply congested, and in one or two cases thinly covered with a film of aphtha. All were in very weak condition; three hardly able to move.

Case. Eruptions, but not pustular, as in the former case. A bullock was also inspected, showing the eruptive form of the disease, with eruptions all over the body; but these were simply desquamation of the cuticle; slight purging, but no blood or mucous discharge from the eyes; six days sick. The contrast between this case, which is simply desquamation of cuticle, without vesicle, pustule, or pit, and the very well

The two contrasted. marked case of vesicular and pustular eruption, with here and there pits, in the buffalo above

described, is very striking; also the difference between the "external" eruptive rinderpest and the "internal" type of the disease is well shown in these cases. SAHARUNPORE.

Mr. G. Oliphant, V. S., of the Stud Department at Saharunpore, accompanied the Commission on the occasion.

Evidence of DOWLAT RAM, *age* 28, *a Lumberdar of the village of Reeree.*

The disease which has appeared among the cattle in this village is called *rora* or *maind*; it appeared about 15 days ago. The first animal attacked belonged to Moonga Goojur; it was a buffalo; it died.

Rora or *maind* (rinderpest) appeared 15 days ago. First animal attacked.

Evidence of MOONGA GOOJUR, *a resident of Reeree, age* 45 *or* 50.

The people here call the disease which has appeared among cattle *rorah*. Never heard of or saw this disease before; my father and grandfather lived in this village before me, but they never told me of this disease; my buffalo was the first to get ill in the village. It got ill 15 days ago, and died after four or five days' illness. My buffalo got sores in its mouth and discharge from its eyes; it had also dysenteric purging. It first showed signs of illness by refusing food and remaining standing. I had altogether seven buffaloes—all got sick and died within about 5 days of the first. I have also 2 bullocks; they were tied in the same shed with the sick buffaloes at night, but were out all day ploughing. They are perfectly well and have shown no symptoms of the disease. Of the four buffaloes which have died, two were in calf and two were giving milk, the other three were calves. Besides mine, only one man, named Gobind, lost a buffalo; this died last night. About 25 animals in this village are now ill with disease. Only 4 or 5 cows have got ill. The disease has only commenced among the cows about 5 or 6 days ago; no cows have yet died. There are three *paths* or divisions in this village. Only the animals in the western division have been attacked with the disease. Hitherto the cattle of one division of the village have been kept separate from those of the other; but we have never heard of the disease being contagious; we know no reason why they should be kept separate. My buffaloes which died had no eruptions on the skin like some of these now produced for the inspection of the Commission. I know of no remedy whatever for this disease, nor do the villagers. I cannot say whether the disease has appeared in the neighbouring villages or not. I don't know at all where this disease came from. The village chamars take the skins of the cattle. The division in which the disease has appeared is west of the canal; the other two divisions of the village are east of the canal; no man in my division has bought any cattle lately. Last May was the last time when cattle were brought for sale to the village. Two months ago a man named Hurmat bought a bullock for Rs. 40 from this dealer, but it has not been ill.

Rorah (rinderpest) never appeared before here.
Commencement of outbreak.
First case followed by others in the same house. Symptoms.
Duration of attack.
Two bullocks of the same house were not attacked.
Only the buffaloes were at first attacked.
Now cows are being attacked.
Disease as yet confined to the western division of village.
Never heard of the disease being contagious.
No remedy known.
Hides.
The canal separates the western from the other two divisions.
A bullock was purchased last May, but this bullock has not been ill.

DISTRICT OF ALLYGHUR. ALLYGHUR.

From H. M. CHASE, Esq., *Magistrate of Allyghur, to the Commissioner, Meerut,*—(*No.* 210, *dated* 14*th July* 1870). H. M. Chase, Esq.

With reference to Circulars No. 53A, December 20th, and No. 55A, December 28th, 1869, from the Junior Secretary to Government, North-Western Provinces, to your address, on the subject of prevalence of cattle disease of an epizöotic nature, I have the honor to inform you that in the latter part of May this year a disease of the above kind broke out among cattle in the Pergunnahs Chundous and Khyr, to the north-west of this district.

2. The first indication of the disease appears to be a swelling of the mouth and hoofs, on which account it is known among the natives as *moopuccah or khurpuccah.*

3. The chief symptoms are a dulness of the coat, the hairs erect, and body trembling; shivering fits; no eruptions of any kind; a watery matter oozes from the mouth; the fæcal evacuations very thin and offensive; urine yellow and thick.

4. The attack lasts 10 days, after which the animal recovers or dies. The natives attribute it to excessive heat and some peculiarity of the atmosphere; but I must remark that the hot season this year has been a remarkably mild one, whereas last year was one of the hottest on record, and no disease of this nature prevailed; so the present outbreak cannot be attributed to heat.

5. The remedies used by the villagers are very simple, and in many instances have proved efficacious. The feet are bathed in water in which the bark of the *babool* tree has been steeped. The grain of *oord* (phaseolus roxburgii), mixed with mustard oil, is first given to eat; but if the evacuations are very frequent and thin, water mixed with barley-meal or leaves of the common hedge shrub, known as *maindi* (lawsonia inermis), are given; sometimes also *sheeshum* leaves (dalbergia sissoo), with the object of cooling the heated intestines.

6. In all, 1,535 head of cattle have been attacked, out of which 332 have died and 848 have quite recovered. The rest are in a fair way towards recovery, and the disease is disappearing, and has not shown itself in any other pergunnahs.

MOZUFFERNUGGUR.

DISTRICT OF MOZUFFERNUGGUR.

D. C. Halkett, Esq.

From D. C. HALKETT, Esq., *Joint Magistrate, Mozuffernuggur, to the Officiating Magistrate, Mozuffernuggur,*—(*dated Mozuffernuggur, 9th November* 1870).

In submitting the following short notes on the nature and extent of the cattle disease in this district, I must premise that I have myself no knowledge of the veterinary science, and that I have had no opportunities of personally examining any of the cattle which have suffered or have died of disease. Hence it will be seen that the only matter I have had at my disposal consists of information which I have been able to obtain from others.

2. I will proceed tehseel by tehseel.

Mozuffernuggur.—Disease has not prevailed to any great extent this year, or to any greater extent than in former years. There has been no disease assimilating to small-pox. A disease called *rorah* is said to have appeared in some places, but not in a dangerous form. It prevails during the rains, when the feet of the cattle swell and are sore.

Jansuth.—The disease among cattle was rather moderate, as compared with former years. Jansuth suffered most, losing 150 or 200 cattle during the month of June. The symptoms were,—eruption of the mouth, followed by diarrhœa and loss of appetite. This disease is called by the native *mahamdee.* In Pergunnah Bhokurheree several cattle died of a disease they call *biswee.* The symptoms in *biswee* are,—appearance of boils on the skin, hard breathing, ulceration of feet (in some instances eruption of the mouth), and a tendency to tumble down. The upland tracts were rather healthy, but there were cases of feet and face being swelled and stomachs dilated. The Khadus people call this *ukrao* and *uphara.* The disease known as *ukrao,* and another *chera,* appeared in Pergunnah Bhooma Sumbulhera. Hard breathing, excessive thirst, watery stools (occasionally mixed with blood), a tendency on the part of the skin to become of a reddish hue—these were the characteristics of *chera.* A good many cattle were lost from this disease. In Pergunnah Khatoulee *rorah* only attacked a few animals; and in this disease the symptoms are,—loss of appetite, thirst, swelling of the mouth, diarrhœa, and sores in the feet.

Boorhana.—In this tehseel the disease prevailed more extensively this year than in former years. As in other tehseels, so in this, the natives can assign no reason for the appearance of cattle disease. Some say, indeed, that there may be some herb or herbs which spring up in the rains which may be productive of the disease, but nothing certain is known on this head. And here, as in other tehseels, they say that it is frequently in unirrigated tracts that the disease is most severe and most prevalent.

Shamlee.—The disease has not been so prevalent in this tehseel as in former years. Cows and bullocks did not suffer, but some buffaloes died of *rorah,* death ensuing in two or three days after the animal was seized with the complaint. The flesh of the dead animals was found to be a good deal perforated.

DEHRA DOON.

DISTRICT OF DEHRA DOON.

H. G. Ross, Esq.

From H. G. ROSS, Esq., *Superintendent of Dehra Doon, to the President, Cattle Plague Commission,*—(*No.* 301, *dated 25th November* 1870).

In reply to your No. 111, dated 18th July last, I have the honor to state—

2. The diseases named in your letter are not known by those names in this district. The two diseases among cattle that are known here are :—

(1).—*Burradook.*
(2).—Sore feet.

Cattle suffering from the first disease pass green dung. The evacuations are watery at first, subsequently they are mixed with blood and mucus. The animal attacked refuses all food, has violent thirst and a rough coat, does not chew the cud. Death ensues between three and eight days. The disease spreads amongst village cattle on one animal being affected.

No particular mode of treatment of the disease is known. Ghee and black pepper or mint, onions and *sisso* tree leaves, pounded and mixed in *oorud* atta, made into a cake and fried in oil, are administered.

In the other disease the feet get sore and the animal froths at the mouth. Death does not result in all cases. The treatment followed is :—scarification and application of *chunam* (lime) to sores. The animal is also made to stand in a pool of water and mud. Worms are often found in the sores.

3. Sometimes a peculiar disease makes its appearance. The animal attacked pants; is unable to stand; the stomach swells. It is the belief of the people that inflammation occurs in the stomach and liver. No treatment is known to combat this disease; death ensues after two or three hours' illness. It is apparently infectious, but is not very common. People in these cases always resort to prayers and incantations. They have no special name for this except *rorah.*

ROHILCUND DIVISION,

COMPRISING THE DISTRICTS OF BIJNOUR, SHAHJEHANPORE, BAREILLY, MORADABAD, AND BUDAON.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	...	Page 417.
Bijnour.	*Collector of Bijnour* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 211. Reporting that bedun (rinderpest) prevailed in his district in 1867-68, and describing symptoms and treatment.*
	The Hon'ble R. Drummond, Commissioner, Rohilcund.	184	21st December 1868	Reporting that cattle disease of a severe type broke out at Amsote in his district, and that he had sanctioned the employment of an establishment for the purpose of segregating the sick from healthy, p. 419.
	Secretary to Government, North-Western Provinces.	167A	11th January 1869	Sanctioning the employment of a segregating establishment at Amsote, in Bijnour, and calling for further report, p. 419.
	C. Planck, Esq., Sanitary Commissioner, North-Western Provinces.	20	26th February 1869	States that during his tour of inspection in the Bijnour District, he learnt, by inquiry, that the cattle disease which existed at Amsote in December 1869 ceased in January 1870, p. 419.
	B. Colvin, Esq., Officiating Magistrate of Bijnour.	336	15th Sept. 1869 ...	States that *pukka* and *chupka* caused great mortality among the cattle last year, p. 419.
Shahjehanpore.	*Collector of Shahjehanpore*	...	23*rd July* 1868 ...	*Selections, Government of India, No. 69, p. 212. Stating that no cattle disease existed in his district, except in Pergunnah Jellalabad.*
	J. Powell, Esq. ...	...	13th May 1870 ...	Forwarding the Commission's Form No. 4, p. 420.
	R. Sanders, Esq., Magistrate of Shahjehanpore.	489	27th September 1870	Describing the diseases from which cattle generally die in his district, p. 421.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Bareilly.	*Collector of Bareilly* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 212. *Stating that no cattle disease existed in his district in the year* 1868.
	W. Kaye, Esq., Collector of Bareilly.	1025	16th August 1870...	Reporting the outbreak of *bedun* (rinderpest) in his district, and submitting the Commission's Form No. 1 duly filled in, p. 421.
	Lieutenant Colonel H. Mills, Deputy Assistant Commissary General, Bareilly.	236	23rd ditto ...	Reporting to the Deputy Commissary General the outbreak of cattle disease among the Commissariat cattle at Bareilly, p. 422.
	Enclosure—Major H. R. Wroughton, Executive Commissariat Officer, Gwalior.	...	.....	Describing the symptoms of the cattle epizöotic at Morar, in Gwalior, and the remedies which were found efficacious, p. 422.
	Lieutenant Colonel H. Mills, Deputy Assistant Comissary General, Bareilly.	1279	8th October 1870...	Reporting that an epidemic had broken out amongst the slaughter cattle at Bareilly, and detailing the measures adopted in order to check the disease, p. 423.
	Ditto ditto ...	...	*8th October* 1870 ...	*Commission's Form No.* 1 *duly filled in.*
	Dr. Corbyn, Civil Surgeon of Bareilly.	...	13th Sept. 1870 ...	Memo. of symptoms and treatment of the disease which occurred among the Commissariat cattle, p. 424.
Moradabad.	*Collector of Moradabad* ...	...	23rd July 1868 ...	*Selections, Government of India, No.* 69, *p.* 211. *Reports that cattle disease prevailed to some extent in the Moradabad District in September and October* 1867.
	C. A. Daniell, Esq., Collector, Moradabad.	482	24th August 1870...	Stating that foot and mouth disease had attacked the cattle of his district, p. 425.
	Ditto ditto ...	497	2nd September 1870	In continuation, gives a description of the most common cattle diseases in his district, p. 425.
	Ditto ditto ...	593	21st October 1870 ..	Mentioning the localities in his district where cattle disease chiefly prevailed during the past season, and ascribing the virulence of the outbreak to the heavy rains, p. 426.
	Ditto ditto ...	593A	Ditto ditto ...	Forwarding the Commission's Form No. 1 duly filled in with regard to his district, p. 427.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Budaon.	*Collector of Budaon* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 212. *Stating that bedun or rinderpest is a very common disease in Budaon, and that the disease prevailed for two months in* 1867.
	S. S. Melville, Esq., Officiating Collector of Budaon.	232	2nd September 1870	Stating that in June last foot and mouth disease and *bedun* (rinderpest) had shown themselves among the cattle of his district, p. 428.

HISTORICAL SKETCH.

HISTORICAL SKETCH.

1867-68. The earliest information from this Division is that contained in the replies to the Circular of the Board of Revenue (No. B, dated 27th March 1868). These represent more prevailing cattle murrain than the replies from any other Division.

The Collector of Bijnour describes a virulent murrain which raged in his district during the cold weather of 1867-68. It was most common in the Forest Pergunnahs of Burrapoora and Afzulgurh, and along the Ganges Kadir, but was not confined solely to these localities. It was known by the names *bedun* or *chera*, and was believed to be contagious.

The mortality was stated from different places to have been one-half, two-thirds, and three-fourths. The symptoms assigned are a mixture of those of rinderpest and foot and mouth disease. The treatment, also, is partly that employed in foot and mouth cases—poultices of the leaves of *keekur*, *kuchnar*, and *ag*, and in rinderpest—cakes of peas or rice flour soaked in oil.

The Collector of Moradabad reports that in September and October (1867) there was some mortality among bullocks and cows. The disease was similar to that which had occurred in the Hurdui District, in Oudh—rinderpest. The mortality was great, and it prevailed mainly among the herds of the Terai and Ganges Kadir.

A special report from the Superintendent of the Terai Pergunnahs tells a tale of great mortality. Disease commenced after the rains, and continued till the latter end of January 1868. The returns collected showed that in a stock of 46,880 head of cattle, 12,221, or 26 per cent., were attacked; and 8,912 died, or 19 per cent. of stock and 73 per cent. of attacked. The symptoms are described briefly as intense thirst followed by bloody stools. The animal generally died on the third or fourth day after its attack. The disease is stated to be *no new one*, and is called *chera*. Isolation was practised, and the cattle of the Tharoo population, who take better care of their cattle, were not attacked.

The Collector of Budaon states that the disease described in the Hurdui District is a very common one, and called *bedun*.

The Collector of Shahjehanpore states that the disease appeared in some villages of the Pergunnah Jellalabad from August 1867 to January 1868.

The Collector of Bareilly reports that no such disease had appeared in his district. Murrain was at this period, therefore, well known and very rife in this Division; and it is interesting to find that here, as elsewhere, its ravages are most marked among the herds upon the grazing grounds of the Terai.

In December 1868 a severe outbreak of disease occurred at Amsote, in the Bijnour District, among the herds which were driven to graze there, owing to the drought elsewhere. An establishment was entertained for the purpose of preventing the spread of the disease by segregation, and the result appears to have been favorable, the disease having disappeared in January.

1870. Disease was again reported to exist in the same grazing grounds at Nujeebabad, towards the north-west of the district, in September 1870. The form on this occasion was *pukka* and *chupka*. Other diseases had also prevailed in the jungles, and deaths had been numerous: rinderpest—*bedun*—was no doubt the chief cause of them.

In the District of Shahjehanpore cattle disease prevailed during the first half of the year "in almost all the pergunnahs and villages of the district."

No precise account of this prevalence has been received, but the names and features of the diseases given show that both rinderpest and foot and mouth disease were among them.

In August 1870 the Collector of Bareilly reported that disease—violent diarrhœa and great thirst—had broken out in and around Mouzah Ukka,

HISTORICAL SKETCH. Pergunnah Asuld. The disease was *bedun*, and had broken out two months previously. In Ukka alone, in a stock of about 1,000 cattle, 225 are said to have been attacked (22·5 per cent.), and 206 to have died (20·6 per cent. of stock and 91 per cent. of attacked). The disease was considered infectious.

On the 15th of August this disease broke out among the Commissariat slaughter cattle in the town of Bareilly. Measures of segregation were immediately adopted. The affected cattle were removed and the unaffected divided into five lots, and kept apart at convenient distances; 55 were attacked and 32 died (58 per cent.), the disease dying out on the 25th August. Hitherto the symptoms had been those usually observed, violent purging, &c., but on the 26th the type changed: 27 cattle were attacked with a breaking out over the body, accompanied with constipation of the bowels. This change in symptoms is ascribed to the cattle being fed with dry *bhoosa* instead of green grass; of the latter disease, 4 died; the remainder were treated by Dr. Corbyn, and with apparent success, with laxatives, and sulphur ointment externally.

Colonel Mills attributed the outbreak among the Commissariat cattle to infection by the sick cattle of the town of Bareilly, which were in the habit of grazing within cantonment bounds. No subsequent report was received from this district or station.

The Collector of Moradabad reported in August that foot and mouth disease had prevailed in the district since March, more particularly on the borders of the Terai. He subsequently reported that in 60 villages of one pergunnah, among 24,036 head of cattle, 811, or 3·3 per cent., had died during the previous 6 months; among 15 attacked, 8 recovered and 7 died. This looks an enormous mortality from foot and mouth disease; but the Collector explains that more probably only severe cases of illness were entered among the sick.

A subsequent letter, dated 21st October 1870, shows that, as a result of a careful local inquiry, disease was found to be widespread in the district. Mr. Daniell appends to this letter a return embracing statistics of 29 out of 250 villages in which disease had been found to exist, and where it had been most severely manifested.

A report from the Collector of Budaon, dated 2nd September 1870, stated that in June the cattle of that district had been affected with both *pukka*—foot and mouth disease—and *bedun*—rinderpest. The evidence above summarised is thus conclusive as to both these forms of disease prevailing frequently, and sometimes with great severity, in all the districts of this Division.

DISTRICT OF BIJNOUR.

From the HON'BLE R. DRUMMOND, *Commissioner of the Rohilcund Division, to the Secretary to Government, North-Western Provinces,—(No.* 184, *dated 21st December* 1868). Hon'ble R. Drummond.

I beg to report for the information of His Honor the Lieutenant Governor that a severe type of cattle disease appears to have broken out amongst the cattle at Amsote, in the Bijnour District.

2. The jungles are so very full of cattle this year, owing to the drought, that any spread of the disease will be attended with the most disastrous results.

3. I have, at the instance of the Collector of Bijnour, sanctioned the employment of the establishment noted in the margin at a monthly cost of Rs. 26. These men have been ordered to the spot to prevent the cattle from infected herds mixing with healthy herds, and the Peshkar of Nujeebabad has been ordered to make a tour of the jungle and report on the state of the cattle in different localities.

1 Jemadar	...	Rs. 6
5 Peons, at Rs. 4 each	...	„ 20
Total	...	Rs. 26

Establishment for segregation entertained;

4. It is certified that the pay of the establishment entertained can be met out of the Forest collections of the district, and I request you will be good enough to obtain His Honor's sanction to its disbursement from the receipts on account of grazing dues.

From R. SIMSON, Esq., *Secretary to Government, North-Western Provinces, to the Commissioner of Rohilcund,—(No.* 167*A, dated 11th January* 1869). R. Simson, Esq.

I am directed to acknowledge the receipt of your letter No. 184, dated the 21st ultimo, reporting the outbreak of a severe type of cattle disease among the cattle at Amsote, in the Bijnour District, and the entertainment of the establishment noted in the margin for the purpose of taking measures to prevent the spread of infection.

1 Jemadar, at	...	Rs. 6
5 Peons, at Rs. 4 each	...	„ 20
Total	...	Rs. 26

2. In reply, I am desired to communicate the sanction of the Hon'ble the Lieutenant Governor to the entertainment of the establishment for three months, the cost being disbursed from the receipts on account of grazing dues in the district. and sanctioned.

3. The Sanitary Commissioner will be requested to proceed to Bijnour, as soon as he conveniently can, to inquire into and report upon the disease, suggesting any remedial measures which may occur to him.

4. I am to request that you will from time to time submit reports on the subject, for the information of His Honor the Lieutenant Governor.

From C. PLANCK, Esq., *Sanitary Commissioner, North-Western Provinces, to the Secretary to Government, North-Western Provinces,—(No.* 20, *dated 26th February* 1869). C. Planck, Esq.

With reference to paragraph 3 of letter No. 167A of 1869, I beg to report for the information of Government that, during my tour of inspection to the towns of the Bijnour District, I made careful inquiry both from the Collector of the District and from many native officials concerning the prevalence of disease amongst the cattle at Amsote, which lies to the northward of Nujeebabad, and was informed on all hands, and especially at Nujeebabad itself, that the disease which existed in December ceased to trouble the cattle in January, and that no cases of it could now be found.

2. Under these circumstances, I was not able to find an animal suffering from the disease; but I have no doubt from the descriptions of the complaint I received it was a contagious form of disease, the proper management of which was either to kill off all the cattle attacked, which could not be expected from the people of India, or to isolate the cattle affected with the disease; and considerable endeavours were made in this direction, attended, I have no doubt, with good results.

From B. COLVIN, Esq., *Officiating Magistrate of Bijnour, to the President, Cattle Plague Commission,—(No.* 336, *dated 15th September* 1869). B. Colvin, Esq.

I have the honor, in reply to your letter No. 438 of the 15th ultimo, to give you the result of what I have ascertained regarding cattle sickness in this district for the past few months. As the information is derived entirely from natives, and as I have not seen any of the diseased cattle, the description of sicknesses, &c., does not pretend to be correct.

BIJNOUR.
B. Colvin, Esq.

2. Last April, the cattle in the grazing grounds* under the hills towards the north-west of the district suffered considerably from what is called *pukka* and also *chupka*. This did not continue long. I ordered sick cattle to be separated as much as possible from the rest of the herds.

* Nujeebabad.

In August, and also up till now, cattle have suffered in the jungles towards the north,† in the eastern portion,‡ and some 14 miles in an easterly direction‖ of the station, from diseases called *ghorey*, *rorey* or *bedun*, and *chera*. Deaths have not been very excessive, though numerous.

† Burrapoora.
‡ Seohara.
‖ Ambhera.

3. The symptoms of the diseases and remedies, as far as ascertainable, are noted below :—

Pukka	...	The feet swell, fester, abscesses form, and the animal dies. Infusion of *sheeshum* or *babool* or *mendhee* leaves given the animal ; feet kept in refuse of distilleries where available.
Chupka	...	The mouth swells as above, hair falls off. *Oord* bread is given, and the animal smeared with mud on the diseased part to prevent insects settling and laying eggs.
Chera	...	Slime falls from mouth, which gets spotted.
Ghorey	...	Slime from mouth ; cattle die very quickly.
Rorey or *Bedun*		Blood is passed. Infusion of *sheeshum* leaves and the earth of white-ants' nests given.

DISTRICT OF SHAHJEHANPORE.

SHAHJEHANPORE.

J. Powell, Esq.

Information regarding Cattle Murrain in the Shahjehanpore District, furnished by JOHN POWELL, Esq.,—(*dated* 13*th May* 1870).

Locality.

Shahjehanpore is a district of the Rohilcund Division. The soil is good, known as *domatya ;* produces sugarcane in abundance and rich cereal crops ; water from 16 feet to 24 feet from the surface.

Number of cattle.

Cattle are numerous, but I cannot state number per square mile.

Breed.

There is only one breed of cattle in the district.

Value.

Ordinary cattle cost Rs. 12 to 16 ; they are, say Rs. 2 dearer now than ten years ago.

Uses for which cattle are employed.

Cattle are employed for agricultural purposes when the land requires their services ; at other times in drawing carts let on hire.

September, October, June, and July are the months for ploughing ; January, February, March for pressing sugarcane. Bullocks only are used in agriculture. Twenty-five bazaar maunds is a load for an ordinary four-bullock cart. Cattle so employed are kept in fair condition, but I cannot state in good condition. The owners will not work hard enough to make money, and therefore cannot afford to feed on grain or oil-cake.

The quantity of milk given by milch cows is very small, generally from 1½ to 2½ seers only.

Housing.

Cattle are housed in sheds or tied up under trees ; during the cold season some sort of covering is placed over the loins. The sheds consist of thatch supported by mud walls.

Feeding and watering.

When at home cattle are fed out of *nands* or from *bins* formed of clay, and they are watered from wells, unless there happens to be a river near.

The common kinds of grass are called *dhoop*, *junka*, *surwalla*, *mutmoor ; bhoosa* (broken wheat straw) and *kurbee* (broken *jowar* stalk) are also given.

Herding.

Cattle are not herded excepting where there are waste lands or forests ; there are forests north and east of the district.

Where there are waste lands or forests, the herds are kept for breeding purposes, but these herds, as a rule, remain the whole year through. During the rainy season it is a custom throughout the district for individuals to send their bullocks to graze in such waste lands, as it is an idle season, and they are sent so that they may pick up flesh.

General condition.

Cattle are lively and hardy, but not large or good workers.

SHAHJEHANPORE.
J. Powell, Esq.

Where there are herds, sometimes there is a master bull, but he roams at his pleasure. As a rule, cows are served by the first bull procurable, without any reference to quality. No special bulls are kept. Breeding.

There is no importation of cattle, nor local markets. There is also no export worth recording.

Hides of cattle which have died a natural death, as well as those killed for food, are exported. I cannot give any information regarding hide dealers. Hides are cured by chamars and sold to traders. Hides.

The district is free from disease generally. This year there have been many deaths from a disease which looks like a plague.

I am not sufficiently acquainted with this part to give any history. There has been no plague within the last ten years; but about ten years since animals were carried off with the same affection; at least so the natives report, but that it was not so virulent as it has been this season. The present disease has existed during the last four months. History of plagues.

I cannot say what the mortality generally is. Out of sixty head I have lost two. Of about eighty Hissar bullocks which were standing in the Factory Parahs six weeks since, fifteen died within a fortnight. Statistics.

The percentage of recoveries of those attacked is large; cannot say precisely, but would say one-half. All kinds of cattle are equally liable to attack.

The plague is a disease of the stomach. There is prostration; after a while offensive evacuations, thin and yellow; shivering occurs on the first and second days; appetite and rumination are lost; the tongue cracks and throat becomes inflamed; there is great difficulty in breathing, sometimes cough; looseness of bowels—with blood or mucus—is the character of the disease; the secretion of milk is suppressed. Symptoms

No measures are taken to disinfect; a few persons keep the diseased animals separate. Sick cattle should be separated entirely, but natives, being fatalists, pay but little attention to such matters. Sanitary measures.

The chamars take the skins and cure them and these find their way to Cawnpore or Calcutta; the carcasses the vultures devour.

There is another disease in the district, but which is always prevalent more or less, and is shown by a mucous discharge from the nostrils and swelling of the feet; though troublesome, it kills but a small percentage of the animals so affected. Foot and mouth disease.

R. Sanders, Esq.

From R. SANDERS, Esq., *Collector of Shahjehanpore, to the President, Cattle Plague Commission, Calcutta,—(No.* 489, *dated* 27*th September* 1870*)*.

In reply to No. 436, dated August last, calling for certain information regarding cattle diseases, has the honor to state, after careful inquiry, that the diseases named in the letter under reply do not generally prevail in this district. Those from which the cattle generally die in this country are the following:—

1.—Disease of the hoofs, *khoorah.*

2.—Fever or *jora.*

3.—A sort of small-pox or *chitka.*

4.—Purging blood, or *bedun.*

5.—Disease of the skin, *pukka.*

2. The above are the principal diseases of the cattle, and they occur in almost all the pergunnahs and villages of this district.

DISTRICT OF BAREILLY.

BAREILLY.

W. Kaye, Esq.

From WILLIAM KAYE, Esq., *Officiating Collector of Bareilly, to the President of the Indian Cattle Plague Commission,—(No.* 1025, *dated Bareilly, the* 16*th August* 1870*)*.

I have the honor to inform you that a cattle murrain is reported to have broken out in Mouzah Ukka and places adjacent in this district; and, adverting to your letter No. 112 of 15th December 1869, to the Secretary to Government, North-Western Provinces, to enclose replies to the series of questions forwarded therewith.

2. The information given in the enclosed refers only to the village of Ukka.

BAREILLY. W. Kaye, Esq.

3. Violent diarrhœa and great thirst seem to be the most prominent symptoms of the disease. Up to date some 300 or 400 animals have died of it.

4. This is the first time the disease is alleged to have broken out at the place.

5. Ukka is some seven miles from the Sudder Station.

Lieut. Col. H. Mills.

From LIEUT. COLONEL H. MILLS, *Deputy Assistant Commissary General, to the Deputy Commissary General, Lucknow,*—(*No.* 236, *dated Bareilly, the* 23*rd August* 1870).

I beg to report that an epidemic has broken out amongst the slaughter cattle at this station, similar to that described by Major Wroughton,—*vide* Commissary General's Circular No. 43, dated 8th April 1870.

The epidemic first broke out on the 15th instant, when there were on the rolls 315 horned cattle.

The cattle which appeared to be in the most hopeless state were sent out to a place about four miles from the cantonment, kindly lent by Lalla Lutchmee Narain, banker of this place. The remainder were divided into five lots, and kept apart from each other on the borders of the cantonment, at convenient distances from each other, to admit of supervision. None are allowed to enter the slaughter cattle lines.

Of the above five lots, one lot was composed of 28 cattle, which were in low condition and had slight signs of sickness.

The sick animals were not allowed green fodder, but were given as much *bhoosa* and water as they liked.

As the symptoms of the disease are exactly the same as referred to by Major Wroughton, the medicines recommended by him have been administered, and have proved of use in the milder cases.

The following is the number of deaths out of 48 attacked with the disease :—

15th August 1870	...	...	...	...	1
17th „	...	...	...	...	6
18th „	...	...	...	...	4
21st „	...	...	...	...	6
22nd „	...	...	...	...	2
				TOTAL ...	19

It is likely that there will be eight or ten more fatal cases amongst those now under treatment.

There has been only one fresh case, and that of a mild form, within the last three days.

I am informed that this disease has been very fatal within the last few days in the villages near this.

I have addressed the Collector asking for information on this point, and a further report shall be submitted shortly.

There was a change of weather on the 21st instant, to which may be attributed, perhaps, the check in the epidemic.

There had been hardly any rain for the previous ten days, and the weather was very oppressive, when a heavy fall of rain cooled the air.

A copy of this letter has been sent to the Commissary General's Office at Simla.

GWALIOR. Major H. R. Wroughton.

Memorandum by MAJOR H. R. WROUGHTON, *Executive Commissariat Officer, Gwalior, of the symptoms of a disease which broke out among the horned cattle at that station, and of the remedies which were found efficacious.*

Symptoms.

The animal refuses to eat, not being able to open the mouth, as in lock-jaw; the ears droop, the urine becomes of a very dark color, and the animal is much purged.

In the first instance the following were given twice a day for three or four days:— GWALIOR.
2 chittacks ghee; half a chittack black pepper (pounded). Major Wroughton. Remedies.

This caused the following effect:—

1*st*, eyes to water; 2*nd*, nose to run; 3*rd*, the animal by degrees was able to open its mouth with greater ease, and to pick up a little fodder. As it improved, the purging became less and less daily. On the third or fourth day the following were administered:—

Katila, ¼ oz. ... } Of each, once in the evening daily, for three or four days. The *katila* to be soaked all night in water. The *niendee* leaves ground on a sill-stone.
Mendee leaves, ¼ oz. ... }

The sick animals had dry fodder and water always at hand, and were allowed to eat and drink whenever they felt inclined.

Out of a herd of 100 horned cattle 26 were attacked, and of this number seven only died, and most of them on the first onset. The above treatment has, however, cured the rest; and as it has been found to be efficacious, I have given it in detail, as it may be of use at other stations.

From LIEUT.-COLONEL H. MILLS, *Deputy Assistant Commissary General, Bareilly, to the President, Cattle Plague Commission,—(No. 1279, dated Bareilly, 8th October 1870).* BAREILLY. Lieut.-Col. H. Mills.

In reply to your No. 477, dated 21st ultimo, I beg to report as follows regarding the late outbreak of epidemic amongst the slaughter cattle at Bareilly.

The epidemic first broke out on the 15th August 1870, when the herd of slaughter cattle numbered 315.

Symptoms of the disease:— Symptoms.

Coat staring, ears drooping, mouth closed and very difficult to open, urine very dark, and violent purging.

The cattle which appeared in the most hopeless state were sent out to a place about 4 miles from the cantonment. The remainder were divided into five lots and kept about a mile apart from each other. Of the above five lots, four lots were composed of sound cattle, and one lot of cattle in low condition, and had slight signs of sickness. The sick animals were not allowed green fodder, but were given as much *bhoosa* and water as they liked. Segregation.

The disease lasted up to 25th, and out of 55 attacked 32 died. The treatment was ghee, black pepper, and *mendee*.

On the 26th August the disease changed in symptoms; 27 head of cattle were attacked with a breaking out over the body, accompanied with constipation of the bowels. Change of symptoms

Dr. Corbyn, Civil Surgeon, treated these cattle and only four out of the lot died, and that was before his medicines had been fairly tried.

The disease, it will be remarked, is quite different in symptoms to that which had attacked the cattle prior to the 26th, but must, I think, be in some way connected with it,—the poison in the blood showing itself by the eruption.

Since that date no fresh cases occurred; but it is worthy of remark that the whole of my cattle on the 26th and 27th became dull and lost flesh in a most remarkable manner, so that I was obliged to get in others at once for slaughter. This may be attributable partly to the sudden change of food from green grass to dry *bhoosa*. After a few days they began to improve, but not until they were allowed to graze for a short time daily.

Dr. Corbyn thinks that the disease he saw, unless treated and relieved at once, would be as fatal as that with which the cattle were first attacked. He considers that both are epidemic and both attributable to the same cause,—atmospheric influence telling more particularly on animals fed on low marshy land,—and he believes it so contagious that one animal would infect a whole herd.

The situation of the cattle-pens at Bareilly is low, and the water from a marsh in the proximity had been close up to the pens for some weeks, owing to the heavy rains this year.

I learn from the Collector of Bareilly that a cattle murrain had broken out some time previous in one pergunnah of his district, which was reported to you, resulting in the death of between 300 and 400 head of cattle, the prominent symptoms being violent diarrhœa and great thirst. Cattle disease in the district.

BAREILLY.
Lieut.-Col. H. Mills.

I am of opinion that the disease was introduced amongst my herd of cattle from the city of Bareilly, as very large numbers of cattle came to graze daily in the cantonment lands; and I found a few days after my cattle were attacked that several cows and buffaloes died on the parade ground of the Infantry barracks, and some days afterwards a cow was found dead in my compound, and another a few hundred yards off, for which no owner could be traced by the Police in the cantonments.

Mortality.

The total number of deaths were as follows:—

	Attacked.	Died.
Violent purging	55	32
Constipation and eruption	27	4
TOTAL ...	82	36

I annex a memorandum drawn up by Dr. Corbyn. I beg to inform you that I think his timely treatment was the means of saving a number of cattle, and I have therefore attached to this a separate memorandum which embodies Dr. Corbyn's recommendations, with a few remarks by myself, showing how fatal the disease proves when treated with native medicines.

I return duly filled in the form sent with your memo. under reply.

J. Corbyn, Esq.

Memorandum of Symptoms and Treatment of Disease which occurred among the Commissariat Cattle,—(dated Bareilly, the 13th September 1870).

Symptoms

The animal appears dull and languid, eyes red and inflamed, with tears trickling from them; the pulse quicker than natural, the body and breath hot, bowels constipated, difficulty of swallowing and no inclination for food; eruptions resembling "variola" all over the body, discharging a considerable quantity of purulent matter.

If the disease is not checked at this period at once, the following symptoms supervene:—swelling about the head, dulness, but not violent heaving, succeeded by staggering and great debility. After a little while the animal falls, and there it lies until it dies.

I saw four die in this manner; they were past treatment. Twenty-three animals received the following treatment; they all recovered and are now convalescents. The treatment consists in checking the fever, relaxing the bowels, healing the sores, and afterwards assisting the strength with tonics, if necessary. Every article in the following prescription can be procured in the bazaar:—

The following laxatives to be given at the onset of the disease:—

Epsom salts	... Four ounces
Sulphur	... Two ounces
Nitre	... Half an ounce
Ginger	... Two drachms

dissolved in a pint of water and administered with the aid of a *nar* or hollow bamboo.

Strong sulphur ointment to be rubbed all over the body; sores to be kept clean.

Where the mouth is sore, the following liniment to be applied several times a day:—

Powdered ginger	... Two drachms
Powdered carrway	... One drachm
Chiretta	... Four drachms

Plenty of fresh drinking water to be supplied on the *nands*. The food to consist only of *chokur* and water, and a little dry fodder.

The animal on no account to be coaxed to eat until rumination is established; he may then return to some high and open grazing ground away from other cattle.

Infectiousness.

The disease is extremely infectious, caused either by atmospheric agency, or feeding on wet and marshy grounds. At the very commencement, precautions should be taken to separate the diseased from the sound.

Symptoms

The symptoms described by Colonel Wroughton, *viz.*, "the animal refuses to eat, not being able to open the mouth, as in lock-jaw; the ears droop, the urine becomes of a very dark color, and the animal is much purged," and which disease has proved so rapidly fatal amongst the cattle here, as stated by Colonel Mills, I should term the "scouring rot." If the disease is neglected or improperly treated, the animal immediately sinks. The cause is the same as in the former malady,—exposure to sudden changes in the weather and feeding on wet land. It is very contagious.

BAREILLY.
J. Corbyn, Esq.

In this disease the liver is always deranged, and there is inflammation of the lining membrane of the large intestines, which if not at once checked terminates in ulceration.

I have treated this complaint often with success. The following ought to be given at once:—

Calomel	...	...	...	...	... One scruple
Chalk	...	...	...	...	... One ounce
Opium	...	...	...	...	... Two drachms

To be given in a pint of warm water.

Next day if motions do not improve, and diarrhœa does not cease, the following to be administered twice daily:—

Cannabis Indica—"Bhung"	...	...	...	...	Two drachms
Powdered bark, madar plant root		...	...	...	" "
Opium	...	...	...	...	One drachm
Chalk	...	...	...	...	" "

To be given in a pint of water.

Segregation.

The diseased animals must of course be separated and placed in a yard where they can get shelter.

The food must be the same as in the former disease.

DISTRICT OF MORADABAD.

MORADABAD.
C. A. Daniell, Esq.

From C. A. DANIELL, Esq., *Collector of Moradabad, to the President, Cattle Plague Commission, Calcutta,—(No.* 482, *dated* 24*th August* 1870).

I have the honor to acknowledge your No. 431, dated ——— August, received by me on the 20th, regarding cattle disease in this district.

The only description of disease which has appeared at all is that commonly known as *pukka*, which appears to be a mild form of "mouth and foot disease."

This *pukka* is by no means unusual, as I dare say you know. It is not generally fatal.

I first noticed it at the end of March in the part of the district bordering on the Terai, and subsequently in different parts of the district animals have been attacked, but for some time now the disease has been on the decrease.

I do not learn that its extent has been great or its fatality in any way considerable. The disease appears to attack both the *feet* and *mouth*, but appears to be more severe in the feet. I have caused inquiries to be made from time to time regarding its existence, but nowhere have I learnt that the existence this year has been extraordinary or unusual.

A cow of my own was attacked, but got perfectly well in five or six days with ordinary native treatment, *i. e.*, keeping the mouth washed out with salt and water, and the feet covered with tar. The feet are also protected by the animal being placed in mud. I have within the last fortnight received a return from two villages in which there were 300 head of cattle, of which 50 have suffered more or less from this disease; out of 300 head, 20 have died during six months, but I am not able to learn that these died of disease, or what the ages of the animals which died were.

Had I found occasion to believe the disease to have been extraordinary or disastrous, I would at once have furnished Government with the formal report.

From C. A. DANIELL, Esq., *Collector of Moradabad, to the President, Cattle Plague Commission, Calcutta,—(No.* 497, *dated* 2*nd September* 1870).

In continuation of my letter No. 482, dated 24th August, regarding the *pukka* disease among certain cattle, I have had detailed information in one pergunnah collected with the following results:—

In 60 villages, among 24,036 head of cattle, 811 have died during the last 6 months. from various diseases, *viz.*, *pukka*, *koorka*, and *bissaree;* out of every 15 attacked, 8 recovered and 7 died throughout these 24,036, but I believe that only those cattle which suffered *severely* are entered among the *sick;* in the case of the *pukka* disease especially, I do not think that more than 20 per cent. of those attacked die usually. With the *koorka* disease, when the throat is attacked and a species of tumour forms, the percentage of deaths to those attacked is much greater; in the *bissaree* disease, when the body swells out and there is a slight running at the nose, and then watery dung, the percentage of deaths is said to be less than in the *koorka* disease.

MORADABAD.
C. A. Daniell, Esq.

2. In the whole 60 villages the percentage of deaths to number of head of cattle is 3·37.

The diseases are not spreading, nor do they appear to attack many head in any one herd. The condition this year I believe to be normal, and not above the average.

The *koorka* and *bissaree* diseases have come on very lately, and appear generally in the rains. The foot and mouth disease (*pukka*) may come at any time.

3. We have had unusually heavy and constant rain since 25th June, and the rivers have flooded unusually; I therefore cannot but expect the cattle to suffer both from constant exposure to the wet, almost living in water as some do, and from blowing themselves out with rank grass, which in some portions of the districts appears to purge the cattle considerably.

4. Inquiries are going on in other pergunnahs, and, if necessary, further information will be sent.

If you get other reports from Rohilcund, you will be the better able to learn whether there is anything unusual in this district as compared with others in this part of the country.

From C. A. DANIELL, Esq., *Collector and Magistrate of Moradabad, to the Commissioner of Rohilcund, Bareilly,*—(*No.* 593, *dated* 21*st October* 1870).

I have the honor to state that in consequence of reports showing that cattle diseases of various forms were attacking cattle in several parts of the district, I have from time to time caused local inquiry to be made.

2. I reported the fact of disease being somewhat prevalent in my letter No. 490, dated 24th August 1870, and No. 501, dated 2nd September 1870. There was nothing in the nature of the diseases to lead me to believe that the attacks were very severe, or that danger was to be apprehended of the diseases assuming an extraordinary virulence. I have within the last six weeks directed a closer examination to be made throughout all the pergunnahs by the Tehseeldars themselves, and have found that the diseases which have attacked the cattle have been of the four usual types, *viz.*, *pukka*, *khoora* or *goorha*, *bissaree*, and *bedun*.

3. As far as detailed inquiry has gone, diseases have been found in certain parts of the Moradabad, Hussunpoor, Sumbhul, Billaree, and Thakoordwara Pergunnahs, while Amroha seems to have been almost free from any severe attacks. Up to the latest reports from the five pergunnahs named, diseases have been found to exist more or less in about 250 villages, and out of these I have selected those villages, 29 in number, in which disease has assumed a severe character, and in which 10 per cent. or more of cattle have been carried off by disease.

4. The virulence of the diseases in these 29 villages, and its existence in the remainder, is attributable to a great extent to the heavy rains, the general ill-condition of the cattle, and the large quantities of rank grass consumed by the cattle, especially by buffaloes. The diseases have been for the past fortnight dying out.

5. I may note that fever and ague have been exceedingly prevalent since the clearing up of the rains among the people; the type is not severe, nor is the mortality at all great, but the same causes which tend to produce an extensive spread of fever among the people are probably the same which have produced the severer attacks of disease among the cattle.

6. A copy of this report and of the form attached will be sent to the Secretary of the Cattle Plague Committee in Calcutta. I beg the favor of your forwarding this report to the Government, as I have reason to believe that rumours of severe mortality among cattle have reached the Government.

Return of Cattle Diseases prevailing in 29 villages of the District of Moradabad.

1	2	3	4	5	6	7	8	9	10
Pergunnah.	Mouzah.	Name of Disease in Vernacular or English.	Date of out-break.	Number attacked.	Number died.	Number recovered.	Number still ill.	Village stock.	Remarks.
Moradabad ...	Sheopooree... ...	Ghoorka ...	26th Augt. 1870	60	20	40	.....	200	
	Laloowala	Bedun ...	15th July „	74	74	.....	.....	604	
	Dheemree	Do. ...	August „	25	25	.....	.....	229	
Sumbhul ...	Bhudrowla	Do. ...	15th do. „	130	90	40	.....	350	
	Eesapoor	Do. ...	1st July „	33	33	.....	.....	51	
	Sunwaree	Do. ...	Do. „	155	115	40	.....	600	
	Buhrampoor ...	Do. ...	Do. „	8	8	.....	.....	80	
	Shoojaetpoor ...	Do. ...	10th August „	50	50	.....	.....	150	
	Ushrufpoor... ...	Do. ...	Do. „	65	60	5	.....	207	
	Duhpa	Do. ...	1st Sept. „	45	29	12	4	210	
	Munnee Khera ...	Do. ...	15th July „	460	425	30	5	1,015	
	Bhurwara	Do. ...	10th August „	36	36	.....	.....	125	
	Mohrana	Do. ...	Do. „	44	40	.....	4	150	
	Bura Tajooddeen ...	Do. ...	20th July „	30	23	7	.....	105	
	Mohummedpoorgunj ...	Do. ...	1st do. „	20	15	5	.....	120	
Hussunpoor ...	Ruhra	Do. ...	22nd Sept. „	302	166	136	.....	725	
	Sirsa	Ghoorka ...	4th do. „	150	50	40	60	968	
	Mulukpoor	Bedun ...	1st do. „	50	14	14	22	271	
	Solavah	Do. ...	1st do. „	25	10	8	7	95	
	Gungesree	Do. ...	5th do. „	226	200	15	11	1,236	
	Deorarah	Do. ..	1st do. „	75	45	15	15	505	
Billaree ...	Gopalpoor	Bissaree ...	20th August „	28	20	8	.....	156	
	Boodnuggur Khundooa	Bedun ..	15th June „	105	70	32	3	522	
	Mhowussoo... ...	Do. ...	May „	50	25	25	.....	225	
Thakoordwara ...	Sooltanpoor Khuddur ...	Pukka ...	July „	58	18	18	22	268	
	Buhadurpoor Khuddur	Bedun ...	June „	53	35	12	6	217	
	Gopalpoor	Ghoorka ...	July „	66	53	8	5	560	
	Gooluria Ghuzufferpoor.	Pukka ...	Do. „	100	41	18	41	508	
	Koomhuria Jubla ...	Bedun and Ghoorka.	June „	15	15	.....	.....	81	
			Total ...	2,538	1,805	528	205	10,533	

Excluding the entries under *ghoorka*, *bissaree*, and *pukka*, the result is as follows:—

Attacked per cent. of stock	...	26·6
Died per cent. of stock	...	20·3
Died per cent. attacked	...	77

Moradabad,
21*st October* 1870.

C. DANIELL,
Collector.

Moradabad.
C. Daniell, Esq.

BUDAON.

DISTRICT OF BUDAON.

S. Melville Esq.

From S. S. MELVILLE, Esq., *Offg. Magistrate and Collector of Budaon, to the President, Cattle Plague Commission, Calcutta,—(No. 232, dated 2nd September* 1870).

In reply to your letter No. 432, dated —— August 1870, I beg to state that in June sickness showed itself among the cattle in this district, but that it is now on the decrease. Two distinct diseases are stated to have showed themselves,—one, that which is generally known, I believe, as the foot and mouth disease, and called here *pukka* ; the other called *bedun*, and which is said to show itself by bloody evacuations, refusal of food, distended stomach, and vertigo. This has been reported to me in answer to inquiries I made in a case of suspected cattle poisoning. No report was made to me by the villagers themselves, so I conclude that the disease is not more severe than it usually is at this season

KUMAON DIVISION,

COMPRISING THE DISTRICTS OF KUMAON AND GURHWAL.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	.....	Page. 433.
Kumaon.	*Commissioner of Kumaon* ...	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 210. *States that cattle disease called "mān" existed in* 1868 *in the eastern pergunnahs and appears more or less every year.*
Kumaon.	*J. Renny, Esq., Commissioner, Kumaon Division.*	443	28*th July* 1870 ...	*States that there was no cattle disease in the Kumaon District in* 1870, *but that a disease called "mān" comes nearly every year and has always been known in that part of the country.*
Gurhwal.	*Assistant Commissioner of Gurhwal.*	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 211. *Reports that from October* 1867 *to January* 1868 *a disease called by the natives "mān" attacked the cattle of his district.*

HISTORICAL SKETCH.

The Commissioner of Kumaon states in his reply to the Circular of the Board of Revenue, No. B, dated 27th March 1868, that "cattle disease is as well known in Kumaon as small-pox among human beings." The disease is called *mān*, and comes every year. When it comes regularly, it is less fatal, but when two or three years have elapsed, it appears in a very virulent form; this *mān* only attacks cattle once, and a *māntuar* bullock or buffalo is much more valuable than one that has not had *mān*. The disease is considered contagious, but no attempt is made at separation. This is not a result of apathy, but from a belief of the people that an animal must get the disease, and the sooner it gets over it the better. *Mān* is considered identical with the Hurdui cattle disease described by Dr. MacReddie, and is said to have been "known in the hills and Bhabur forests *from of old;* it is even known in the Snowy Range, and sometimes carries off large numbers of *jooboos* (a cross between the cow and yak); but in such cases the disease is believed to be taken up by the Bhootea traders from the lower country." This fits into the evidence collected at Darjeeling concerning the prevalence of disease among the cattle of Nepal and Thibet, and is further confirmed by information obtained from Dr. Wright, Residency Surgeon at Katmandoo. Horses, sheep, and goats, it is further stated, are not known to be attacked by *mān*.

The local officer at Kumaon states that the cattle of the eastern pergunnahs have been suffering severely from this disease.

The information from Gurhwal is to the same effect. *Mān* had been prevailing from October 1867 to January 1868 in the Bhabur forests of the district: about half of the affected cattle are said to have died.

The only information obtained from this Division in addition to the above is a letter from the Commissioner of Kumaon, dated the 28th July 1870, in which it is stated that no disease prevailed at that time, but that *mān* comes every year and has been always known in that part of the country. There can be little doubt that this *mān* is rinderpest, and it is to be remarked that foot and mouth disease is not mentioned in these reports.

1870.

JHANSIE DIVISION,

COMPRISING THE DISTRICTS OF JHANSIE, JALOUN, AND LULLUTPORE.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Districts.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	...	Page 437.
Jhansie.	*Extract (para. 92) from Report of Sudder Board of Revenue, N.-W. Provinces, for* 1861-62.	...	...	*Selections, Government of India, No.* 69, *p.* 200. *Stating that cattle disease broke out with great virulence in Jhansie in* 1861-62.
	Major B. P. Lloyd, Commissioner, Jhansie Division.	557	1*st March* 1864 ...	*Selections, Government of India, No.* 69, *p.* 203. *Reporting on the subject of cattle disease which prevailed in the Jhansie Division during the year* 1861-62.
	Deputy Commissioner of Jhansie.	...	28*th July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 214. *States that gooshela (hoof disease) and cow-pox are the diseases known in his district.*
	J. P. White, Esq., Officiating Deputy Commissioner, Jhansie.	155	15th Sept. 1870 ...	Reports that cattle disease did not exist in 1870 in his district, except in the villages of Dhoorkhooroo and Deeghara, p. 438.
Jaloun.	*Deputy Commissioner of Jaloun.*	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 214. *States that no cattle disease of epidemic form, such as had broke out in Hurdui, has existed in his district.*
	Lieut. Colonel J. Davidson, Deputy Commissioner of Jaloun.	640	19th Nov. 1870 ...	Stating that no cattle disease of any sort prevailed in his district, but that in June last the cattle of the Koonch Pergunnah suffered from an affection of the throat, p. 438.
Lullutpore.	*W. C. Plowden, Esq.—Abstract of Lullutpore Depy. Commissioner's letter.*	...	23*rd July* 1868 ...	*Selections, Government of India, No.* 69, *p.* 214. *States that no epidemic prevailed in* 1868 *in his district.*
	Major J. Davidson, Deputy Commissioner of Lullutpore.	226	7th August 1868 ...	Reports that cattle disease has broken out in the district, p. 438.
	Ditto ditto ...	304	22nd October 1868	Further report on the subject, p. 438.

Index of Records.

Districts.	From whom received.	Number.	Date.	Reference and Purport.
Lullutpore,—*continued.*	J. Liston, Esq., Officiating Deputy Commissioner of Lullutpore.	232	12th July 1869 ...	States that the mortality among the cattle in his district during the past year 1868 has been very great, and enters into details, p. 439.
	Lieut. Col. A. G. Davidson, Deputy Commissioner, Lullutpore.	406	*2nd Sept.* 1870 ...	*Reports that although careful inquiries have been instituted, no cattle disease can be discovered in his district.*
Gwalior.	Major H. R. Wroughton Executive Commissariat Officer, Morar.	349	28th Oct. 1870. ...	Forwarding Commission's Form No. 1 duly filled in, with reference to the recent outbreak of cattle disease among the Government Commissariat cattle at Morar, in Gwalior, p. 440.

HISTORICAL SKETCH.

The information from this Division is more ample and continuous.

1861-62. As early as the rains of 1861, the prevalence of *matah* was observed in the District of Jhansie. The disease caused great loss in the pergunnahs east of the Betwa. The symptoms are not given: it was considered highly infectious, and precautions were taken to segregate—presumably with some success, for it is stated that where precautions were not taken, almost all the cattle of some villages were carried off. Foot and mouth disease prevailed simultaneously.

1863-64. The Deputy Commissioner of Lullutpore reports in March 1864 that within the last two years a destructive cattle disease broke out in his district. The symptoms noted were cough, swelling of the throat, and copious discharge from the nose. It is difficult from this statement to say what the species of disease was—most probably it was rinderpest; and it is noted that the natives practised separation as a precaution against infection.

1868. The replies to the Board's Circular are to the effect that no disease prevailed in Lullutpore; that cow-pox and hoof disease—*gooshela*—were known in Jhansie, and also a disease attacking the mouth. No disease prevailed in Jaloun.

In July 1868 cattle disease prevailed in the District of Lullutpore. Both foot and mouth disease—*bikra*—and rinderpest—*chechuck*—prevailed simultaneously.

The pergunnahs affected were Marroura, Mehrowrie, and Banpore, and in October 455 deaths had been reported. Segregation had been practised, apparently with good result.

1869. In 1869 there was great loss of cattle in Lullutpore, both from starvation and "small-pox." The mortality in the Tehsildari of Lullutpore is put down at 10,320, and in that of Mehroni at 8,794; total, 19,114. The disease commenced in February, and is said to have been introduced from Saugor by some Bunjara bullocks. The disease of 1868 is also said to have been brought from Saugor. Another disease called *gorara*, a swelling of the throat and discharge from the nostrils, also prevailed in the district.

1870. In February 1870 the Commissariat cattle at Gwalior were attacked by a disease characterised by purging. In a herd of 100 cattle, 26 were attacked and 2 died; they were treated with ghee and pounded black pepper, and segregation was practised.

Foot and mouth disease—*khooseeta*—broke out in the same station in October. The origin of these diseases could not be traced.

The Deputy Commissioner of Jhansie reports in September 1870 that *khooseeta* prevailed in Sub-division Gurotha of that district, and small-pox in Mouzah Deegarah of the Jhansie Sub-division, where 15 cattle had died. This disease is said to have come from the contiguous Gwalior territory.

The Deputy Commissioner of Lullutpore reports in September that careful inquiry throughout his district was made, with the result that no disease was found to prevail.

The Deputy Commissioner of Jaloun wrote in November that, with the exception of *gurera*, a swelling of the throat, which attacked some cattle in July, no disease prevailed in his district.

JHANSIE.

DISTRICT OF JHANSIE.

P. J. White, Esq. *From* P. J. WHITE, Esq., *Officiating Deputy Commissioner, Jhansie, to the President, Cattle Plague Commission,*—(*No.* 155, *dated* 15*th September* 1870).

In reply to your letter No. 433, dated August 1870, I have the honor to stat that there has been no loss of cattle in this district owing to the murrain during the last eyear. The following gives particulars for the different sub-divisions of the district:—

Mote and *Mow.*—No disease.

Gurotha.—Was also healthy, but in Mouzah Doorkhooroo the sickness called *khooseta* prevailed; it disappeared, however, in a very few days without any mortality.

Jhansie.—Healthy; only in Mouzah Deegarah 15 cattle died of small-pox, and the disease did not extend to any other place. This disease made its appearance from Mouzah Moostura, in the contiguous Gwalior territory.

JALOUN.

DISTRICT OF JALOUN.

Lt. Col. J. Davidson. *From* LIEUTENANT COLONEL J. DAVIDSON, *Deputy Commissioner, Jaloun, to the President, Cattle Plague Commission,*—(*No.* 640, *dated* 19*th November* 1870).

In reply to your No. 434, dated August last, I have the honor to inform you that the replies received by me from the pergunnah officers of this district are unanimous in stating that no sort of cattle disease is now prevalent.

2. The Tehsildar of Pergunnah Koonch reports that in the month of July some of the cattle were attacked by a disease called *gurerah* by the agricultural classes. This appears to be an affection of the throat, and is frequently fatal to buffaloes when seized with it. Oil of *sursow* or *til* is used as a remedy for it by the natives.

LULLUTPORE.

DISTRICT OF LULLUTPORE.

Major J. Davidson. *From* MAJOR J. DAVIDSON, *Deputy Commissioner, Lullutpore, to the Junior Secretary to Government, North-Western Provinces, Nynee Tal,*—(*No.* 226, *dated* 7*th August* 1868).

In reply to your No. 189A, dated 30th ultimo, calling for a further report regarding the cattle disease in certain parts of this district, I have the honor to state as follows.

2. The total number of villages hitherto visited by the disease appears to be nine, situated in Pergunnahs Marroura, Mehrowrie, and Banpore.

3. The total loss is about 150 head of cattle, but the Tehsildar has been directed to furnish more precise details on this point.

4. As it is upwards of a month since the disease made its appearance, the losses do not seem to be heavy, nor does the progress of the disease appear rapid.

5. The heaviest loss (53 head) is reported from Mouza Keolaree, Pergunnah Mehrowrie; but on the 17th July, when the Tehsildar made inquiries on the spot, the disease was reported as having disappeared there; and as the instructions regarding segregating the healthy from the infected animals had been carried out, I infer that some good was thus effected.

6. Since the 17th July the disease appeared in three other villages in Pergunnah Banpore, and the latest account states that it was still going on, the losses in each village being from 15 to 20 head.

7. The disease seems to be taking a course from south to north; and as it was first reported from a village adjoining the Saugor frontier, it may possibly have entered from that district. On this point I am in communication with the Deputy Commissioner of Saugor.

From MAJOR J. DAVIDSON, *Deputy Commissioner, Lullutpore, to the Junior Secretary to Government, North-Western Provinces,*—(*No.* 304, *dated* 22*nd October* 1868).

I have the honor to submit the report called for in your No. 313A, dated 2nd August, regarding the character of the cattle disease lately prevailing in parts of this district.

2. I find that there were two kinds of disease; the first called *bikra:* this attacks the hoofs, which become sore and emit a discharge; there is also a mucous discharge from the mouth: this disease either kills or cripples the animals.

3. Secondly, *chechuck,* of which the symptoms are said to be discharge from the mouth, the eyes become affected, the animal is unable to eat or drink, and its color is changed to a blackish hue.

LULLUTPORE.
Major J. Davidson.

4. I am obliged to give these details from the Tehsildar's reports, as neither the Civil Surgeon nor myself have had any opportunities of seeing any of the diseased animals. The total number of deaths up to date of the last return is stated to be 455.

5. I regret the delay that has occurred in replying to your letter, which for some time escaped my notice under the unusual pressure of work in the Revenue Department.

From J. LISTON, Esq., *Officiating Deputy Commissioner, Lullutpore, to the Secretary to Government, North-Western Provinces,*—(*No.* 232, *dated* 12*th July* 1869).

J. Liston, Esq

In answer to your letter No. 120A, dated 24th June 1869, I have the honor to report as follows.

2. The mortality among the cattle in this district has this year been very great, but it is a difficult thing now to give the numbers that have died of small-pox.

3. Shortly after I joined this district, finding small-pox amongst the people and cattle, I called for reports, which I continued to get through the Police; but the zemindars, imagining that no benefits would accrue to them from making such reports, seldom reported deaths among cattle till lately.

4. The Tehsildar of Lullutpore on the 19th June reported the total number of cattle dead of hunger and disease up to that date in his pergunnahs to be as follows:—

Lullutpore	... 1,918
Banser	... 2,371
Talbehut	... 5,987
Balábehut	... 44
TOTAL ...	... 10,320

This report, knowing that the tehsildar took some trouble about his inquiries, and having myself visited the three first-named pergunnahs in May and June, I believe may be relied on.

5. The Tehsildar of Mehrowrie reports 8,794 deaths of cattle from small-pox alone as follows:—

Banpore	... 5,348
Mehrowrie	... 948
Marroura	... 2,462

This I consider to be an exaggerated report. The Tehsildar has, I fear, only lately made inquiries, and the zemindars, being now anxious to get advances to buy cattle, have misled him as to the actual numbers. From what I saw myself, and from what the zemindars of these pergunnahs say, I think that the Tehsildar's report doubles the real numbers of deaths.

6. The disease first commenced in Pergunnahs Marroura and Mehrowrie in the month of February, and was, it is supposed, brought in by the Bunjara bullocks bringing in grain from the Saugor side. From these it spread into Banpore, where, especially in the village of Keilgowan, it was very deadly as early as February, though not to the extent shown by the Tehsildar. It did not get into Bansee and Talbehut till well on in March. The Lullutpore Pergunnah, strange to say, suffered less than any other.

7. In April, when in the Pergunnahs of Marroura and Mehrowrie, I found that out of the 45 villages in the Marroura Police Circle the cattle in 23 villages were affected. In Mehrowrie the disease did not appear to exist to the same extent in the villages visited by me, though it did not leave that pergunnah till the middle of May.

8. The reports sent from Banpore were also then very bad, especially in and near the town of Bar.

9. I visited the Banpore Pergunnah in May, and remained in it till near the end of the month, by which time the disease had nearly left, as reported by me on the 20th of that month. In Talbehut and Bansee the disease was not so bad as in Banpore and the southern pergunnahs, but continued for some time longer.

10. The district is now, I am glad to say, clear of the disease as regards cattle.

11. With regard to the disease called in this district *gorara*, I regret that I am unable to give the required information promised in my weekly report dated 20th May. I sent for cattle reported to have died of the disease, and some were sent; but, on examination, Dr. Dutt found that, through the stupidity or carelessness of the Lumberdar of Talbehut, the animals sent up were not those affected with this disease. Both Dr. Dutt and I were obliged to return to Lullutpore next day, and no further opportunity has occurred of inquiring into the matter.

LULLUTPORE. J. Liston, Esq.

12. The disease, however, I find from inquiry, is not new, but is well known in the district. The symptoms, however, are those shown in my report dated 20th May, and are something in the style of glanders. The throat of the animal attacked swells up, there is a discharge from the nostrils, and death follows in four or six days.

13. Dr. Dutt writes regarding the barks of the *kutbur*, *ghunt*, *oomur*, and *kurar* as follows:—"*Oomur* and *kutbur* belong to the fig tribe; the powdered barks are sweetish to the taste, and are usually taken mixed with flour or some grain. The powdered barks of *ghunt* and *kurar* are stringent, and are also taken mixed with flour. All the barks have little or no nourishment, and act only mechanically in allaying hunger. They are indigestible, and induce costiveness of the bowels. No deleterious effects follow their immediate use.

14. The Assistants in charge of the works, in answer to my inquiries made when I reported the use of the said barks, all informed me that they were used, but that they had not observed any ill effects from their use.

Major H. R. Wroughton.

From MAJOR H. R. WROUGHTON, *Executive Commissariat Officer, to the President, Cattle Plague Commission,*—(*No.* 349, *dated* 28*th October* 1870).

* See letter at page 424, in which this information is concisely given.

In acknowledging receipt of your letter No. 546 of the 18th instant, I have the honor to state that all the details I can give of the disease that broke out among the Government slaughter cattle at Morar in February 1870 are shown in the accompanying form,* which I hope will be found sufficient to enable you to understand fully the nature of the disease.

The disease suddenly broke out without any preliminary symptoms, and it was confined to the herd it attacked. I heard nothing of its spreading among the neighbouring villages.

Another kind of disease has just now appeared among the slaughter cattle, which is also called by the natives *khooseeta* or footsore.

The hoof falls off, and the animal becomes totally lame. The only other symptom is the running of the nose, but the cattle so attacked eat their food well. It is also reported that this disease has appeared among the sheep in the different villages from whence the supply is obtained; seven horned cattle belonging to the Government slaughter-yard have been taken with it; before they got very ill the following treatment cured them:—

Oil of turpentine applied to the sore, and *oorud* atta ½ seer, and 1 chittack mustard oil given to each animal daily as long as not properly cured.

Five have been totally cured within ten days; two are still under treatment.

THE PUNJAB,

COMPRISING THE DIVISIONS OF DELHI, HISSAR, UMBALLA, JULLUNDUR, UMRITSUR, LAHORE, RAWULPINDEE, MOOLTAN, DERAJAT, AND PESHAWUR.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Delhi.	Historical Sketch ...	...	.....	Page 445.
	Letter from the President of the Cattle Plague Commission to the Secretary to Government of India, Home Department.	312	24th May 1870 ...	Forwarding letter No. 140, dated 5th May 1870, from Lieutenant Colonel Babbage, Deputy Commissioner of Gujranwalla, reporting losses by murrain; and requesting that the Punjab may be placed within the sphere of inquiry of the Cattle Plague Commission, p. 450.
	Letter from Secretary to the Government of India.	2891	10th June 1870 ...	Authorizing the Cattle Plague Commission to visit the Punjab, p. 451.
	Evidence recorded by Cattle Plague Commission.	...	24th July 1870 ...	Page 451.
	J. H. Oliver, Esq., C. S. I., Deputy Commissioner, Goorgaon.	967	12th December 1870	Reports prevalence of the purging disease in some villages of the district, p. 451.
	Two Lumbardars of Kurnaul.	...	6th September 1870	Evidence recorded by Cattle Plague Commission, p. 451.
Hissar.	H. Dawson, Esq., V. S. ...	...	23rd April 1864 ...	Reports on the late epidemic at Hissar, and notices the symptoms and the rapid fatality, p. 452.
	Ditto ditto ...	...	21*st January* 1865	*In reply to docket No.* 205 *of 8th ultimo, from the Commissioner and Superintendent of Hissar Division, suggests some plan to be adopted in order to prevent the great mortality from the disease among cattle.*
	Ditto ditto ...	...	June 1865 ...	Forwards a few rules for the treatment of sick cattle for the information of Lieutenant Governor, p. 453.
	T. H. Thornton, Esq., Secretary to the Government of Punjab.	362	15th February 1866	Circulates to all Commissioners of Punjab the rules laid down by Mr. H. Dawson, Veterinary Surgeon, for precautions and treatment of cattle murrain, p. 454.
	H. Dawson, Esq., V. S. ...	...	June 1865 ...	Says that the sick cattle should be kept apart in a clear and airy shed, and the first stomach opened for the escape of the gas, which distends it, and prescribes remedies for removing the local symptoms, p. 454.

Index of Records.

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Hissar—*contd.*	Evidence of Pema Goalla and Hansari.	...	22nd July 1870 ...	Evidence taken by the Cattle Plague Commission at Hissar, p. 455.
	Officer in charge of the Cattle Farm, Hissar.	153	9th August 1870 ...	Forwards a form showing the total deaths that occurred during the years 1860 to 1869, p. 457.
Umballa.	Lieutenant Colonel W. R. Elliot, Deputy Commissioner, Loodianah.	559	26th May 1870 ...	Reports the prevalence of *mokh* in the Jugraon Tehseel in March 1870, p. 458.
	J. A. E. Miller, Esq., Secretary to Financial Commissioner, Punjab.	384	*9th June* 1870 ...	*Reports on disease in Loodianah—mokh—which prevailed last year and still exists, but is fast disappearing.*
	Evidence of villagers of Kakoowara.	...	5th August 1870 ...	Evidence taken by the Cattle Plague Commission at Kakoowara, in Loodianah District, p. 458.
	Deputy Commissioner of Loodianah.	...	15th September 1870	Fortnightly report of cattle disease in the Loodianah District, 15th September 1870, p. 459.
	Deputy Commissioner of Umballa.	756	7th November 1870	Return showing the deaths from supposed epidemic among the cattle in Umballa District, p. 459.
	Major J. Parsons, Deputy Commissioner, Simla.	950	17th October 1870	Form No. 1 filled in, p. 463.
Jullundur.	H. P. Dickson, Esq., Civil Surgeon, Dhurmsala.	...	9th June 1870 ...	Offers remarks on the foot and mouth disease among the Commissariat cattle at Dhurmsala, p. 463.
	A. C. C. DeRenzy, Esq., Sanitary Commissioner.	819	*27th August* 1870	*Forwarding letter No.* 484 *from Lieutenant Colonel T. W. Mercer.*
	Lieutenant Colonel T. W. Mercer, Deputy Commissioner, Kangra.	584	17th August 1870	States that cattle disease exists on a large scale and causes great havoc, of which the Tehsildars were totally ignorant, and forwards the following letter, p. 463.
	Captain A. Harcourt, Deputy Commissioner, Kooloo	...	11th ditto ...	States that murrain has broken out among the Kooloo cattle, called *koorug-moorug* by natives; gives its symptoms, and the remedies that are administered, p. 464.
	Leslie Saunders, Esq., C. S., Deputy Commissioner.	...	.....	Return of deaths from disease in Jullundur for the years 1869-70, p. 464.
Umritsur.	Major F. M. Birch, Deputy Commissioner, Umritsur.	866	30th May 1870 ...	Reports an outbreak of disease in Choballa, 16 miles from Umritsur, and gives the symptoms of it, p. 467.
	T. H. Thornton, Esq., Secretary to Government of Punjab.	643	1st August 1870 ...	Reports that Major Birch has informed him that cattle disease has ceased in Ajnalla Tehsil, in Umritsur, p. 467.
	General R. G. Taylor, C. B., C. S. I.	237	*19th September* 1870	*Forwarding letter No.* 322 *from the Deputy Commissioner of Umritsur.*
	Deputy Commissioner of Umritsur.	332	5th September 1870	Form No. 1 filled in, p. 467.
	Villagers of Vadâlâ ...	...	9th August 1870 ...	Evidence recorded by the Cattle Plague Commission, p. 467.
	General R. G. Taylor, C. B.	243	*22nd September* 1870	*Forwards Goordaspore statistics from the Deputy Commissioner.*
	Ditto ditto ...	239	*19th Ditto* ...	*Forwarding the following letter.*

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Umritsur—*contd.*	Major C. V. Jenkins, Deputy Commissioner, Sealkote.	334	9th September 1870	Forwards the letter of Sub-Assistant Surgeon Futteh Singh on the cattle disease in Sealkote District, p. 468.
	Sub-Assistant Surgeon Futteh Singh.	...	29th August 1870...	Reports on the symptoms and nature of the disease that had attacked the cattle of Sealkote, p. 469.
	Fortnightly returns from Umritsur, Goordaspore, and Sealkote.	...	.....	Page 471.
	Lieutenant Colonel H. P. Babbage, Deputy Commissioner, Gujranwalla.	335	16th August 1869...	Reports on cattle disease in the bar, with memo. by Civil Surgeon, p. 472.
	Dr. Quinnell, in Medical charge, Gujranwalla.	...	October 1869 ...	Reports on cattle plague in Gujranwalla, p. 472.
Lahore.	T. H. Thornton, Esq., Secretary to Government, Punjab.	3333	9th November 1869	Forwards reports by Dr. Quinnel, on cattle murrain in the Gujranwolla District, p. 472.
	J. A. E. Miller, Esq., Secretary to Financial Commissioner, Punjab.	...	.....	Forwards copy of a letter, No. $\frac{98}{1210}$, dated 11th May 1870, from Major W. G. Davies, Commissioner and Superintendent of Lahore, with copy of No. 140, from Colonel H. P. Babbage, Deputy Commissioner of Gujranwalla, reporting on the cattle murrain in the District of Gujranwalla, p. 474.
	T. H. Thornton, Esq., Secretary to Government, Punjab.	246	23rd March 1870...	Reports on the re-appearance of cattle disease in Gujranwalla in the bar, p. 474.
	Lieutenant Colonel H. P. Babbage, Deputy Commissioner of Gujranwalla.	285	20th May 1870 ...	Reports that cattle disease was very severe on the bar in the district about 16 months ago: papers obtainable from Lahore Commissioner's office, p. 474.
	G. Knox, Esq., Deputy Commissioner, Ferozepore.	147	21st ditto ...	Reports on the outbreak of disease among the cattle of Ferozepore, though many deaths have not taken place, p. 474.
	Major W. G. Davies, Commissioner, Lahore.	2284	25th August 1870...	Form No. 1 filled in by Dr. Williams, Civil Surgeon, p. 475.
	Ditto ditto ...	2600	28th Sep. 1870 ...	Report of an outbreak of pleuro-pneumonia in the Kamokie Pergunnah. — p. 475.
	Lieutenant Colonel H. P. Babbage, Deputy Commissioner, Gujranwalla.	355	22nd ditto ...	Report of an outbreak of pleuro-pneumonia in the Kamokie Pergunnah. — p. 476.
	Major W. G. Davies, Commissioner, Lahore.	3042	12th November 1870	p. 476.
	Lieutenant Colonel H. P. Babbage, Deputy Commissioner, Gujranwalla.	401	7th ditto ...	Report that *bhooknee* is spreading. — p. 476.
	Ditto ditto ...	449	12th December 1870	Reports that *bhooknee* is abating on the bar, p. 476.
	Sergeant O. Jackson, Butcher Sergeant, Meean Meer.	...	10th August 1870	Evidence taken regarding diseased meat, p. 476.
	Khoda Bux ...	...	1st September 1870	Evidence recorded by Cattle Plague Commission. — p. 477.
			15th August 1870...	p. 478.
	Villagers of Koka ...	...	13th ditto ...	p. 478.
			14th ditto ...	p. 478.
	Ditto ditto Shekhoopoora	..	15th „ ...	p. 478.
			16th „ ...	p. 478.
	Evidence taken at Lahore...	...	19th and 20th ditto	Page 480.
	W. M. Muir, Esq., M. D., Inspector General of Hospitals.	32	18th January 1869	Reports on the cyst-infected meat observed in the slaughter-houses in Punjab, p. 481.

Index of Records.

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Lahore—*contd.*	A. C. C. DeRenzy, Esq., Sanitary Commissioner, Punjab.	966	31st December 1868	Reports on the tapeworm among the Artillery in Mooltan, p. 481.
	J. T. C. Ross, Esq., F. R. C. S.	...	23rd May 1868 ...	Reports on the cyst-infected meat in the Punjab, p. 482.
	H. G. Gordon, Esq., M. D., Deputy Inspector General of Hospitals, Meerut.	...	27th May 1870 ...	Forwards report, dated 27th May 1870, on parasitic diseases in cattle and sheep of the Punjab, as observed by J. Fleming, Esq., M. D., Staff Assistant Surgeon, Delhi, p. 486.
Mooltan.	W. E. Blyth, Esq., Deputy Commissioner, Montgomery.	330	3rd ditto ...	Reports that since 1867 there has been no disease among the cattle; but with reference to the disease of the year 1867, answers Form No. 1, p. 489.
	G. E. Wakefield, Esq., Deputy Commissioner, Jhung.	468	16th June 1870 ...	States that cattle disease does not prevail epidemically in the district, but sporadically, and gives the symptoms, p. 490.
	A. Brandreth, Esq., Commissioner, Mooltan.	145	14th July 1870 ...	In his reply to T. H. Thornton, Esq., states that there is very little disease among the cattle in the district, and communicates his observations as to the causes of the disease, p. 490.
	G. E. Wakefield, Esq., Deputy Commissioner, Jhung.	270	18th August 1870 .	Reports that cattle disease in Chinote Tehseel last year was of an epidemic form, as in the Gujranwalla bar, and gives the total number of deaths, 14,795, p. 491.
	Evidence recorded at Shaik Boreham and Kumalia.	..	24th ditto ...	Evidence recorded by the Cattle Plague Commission. p. 491.
	Ditto at Khokar ...	...	25th ditto ...	p. 493.
	Ditto at Baharalla on the Jhung bar ...	...	27th ditto ...	p. 496.
	Ditto at Kumalia ...	...	29th ditto ...	p. 494.
	Ditto at Doubrie ...	...	30th ditto ...	p. 495.
	Ditto at Kumalia ...	...	30th ditto ...	p. 495.
	Ditto at Jhung ...	...	30th ditto ...	p. 497.
	Dr. C. E. Smith, M. R. C. S. and L. S. A., 11th Hussars.	...	17*th December* 1870. 15*th ditto* ...	*Reports regarding the cause of pleuro-pneumonia among the cattle of South Africa, and the manner in which inoculation is carried on there.*
Rawulpindee.	J. C. Plowden, Esq., Commissioner of Murree.	153	10th August 1870	Mentions the diseases that are prevalent in the district of Murree among goats, sheep, and horned animals, p. 499.

HISTORICAL SKETCH.

The instructions of the Government of India (page 1) regarding the conduct of the inquiry into cattle murrains in Bengal did not originally indicate the Punjab as a field of observation or research. Reports were, however, received, more particularly regarding the districts of Gujranwalla and Jhung, which showed that most serious losses by murrain were frequently sustained in this province. The reports, moreover, gave such a meagre and imperfect account of symptoms, that the diseases causing such wholesale havoc among cattle could not be identified. It was stated, for instance, "that no animal once attacked recovered; they languish sometimes for months, but surely die." This was so contrary to the experience of the Commission that it was felt that nothing short of a local inquiry could satisfactorily determine the nature of the murrain, or enable the Commission to suggest means by which its ravages might be limited. Government was, accordingly, addressed, and permission was readily accorded to visit the Punjab. This was done in July and August, and a large mass of information was obtained which satisfactorily solved the problem of what these destructive murrains were. It was found that pleuro-pneumonia, called by the natives *pheepree*, was a well-known and frequently-occurring disease of cattle, and had been known from time immemorial. Cases were seen, *post-mortem* examinations performed, and evidence led, which placed this on a basis of certainty. Another disease, very fatal in character, called locally *bhooknee*—a very intractable form of diarrhœa—had caused great losses of stock in some districts, Gujranwalla and Jhung especially. This disease attacks cattle at the latter end of the hot season, when pasturage is hardly to be obtained and the water is scanty and foul. At such a time the half-starved and debilitated cattle are doubtless attacked with diarrhœa, from eating rank or acrid herbage and plants and drinking foul water. HISTORICAL SKETCH.

During the rains and cold weather the pasturage in the Punjab is generally abundant and very good, and at these seasons the disease *suth*—quarter-ill or black quarter—is not infrequently met with among cattle.

Rinderpest, under the local names of *peer, vair, vah, vedun, sirruk, bedun, mah, mān, mowah, burra rog, sitlah, matah, andar-ka-matah*, &c., is unfortunately as well known here as in other parts of India. Ample evidence was obtained of its actual existence in different parts at the very time of the Commission's visit. Cases were seen and examined, and *post-mortem* examinations performed, which placed this beyond doubt; and the oral testimony of the inhabitants (who were always found to be most frank and open in their interviews and dealings) shows that rinderpest has occurred in the province from time beyond recollection. Foot and mouth disease, called *dhukka, koorug-moorug, laroo, khoorah, khoora-phutta*, &c., is also to be found among the cattle in every district. Another affection of cattle was also found to be very prevalent among cattle, namely, cystic disease. This malady has such an intimate relation to public health that the fact that cattle are, in different parts of the Punjab, to a large extent affected by two forms of immature tapeworm —found in the flesh (tænia mediocanellata), and viscera (tænia echinococcus)— cannot be too strongly put forward. Neither of these diseases can properly be called murrain, and they are more important as liable to cause directly a loathsome, or indirectly a fatal, form of disease among consumers of beef, than as diseases of stock, though there can be little doubt that, even putting the use of cattle as food out of consideration, the serious impairment of the functions of their liver, lungs, and spleen, in consequence of their being occupied by large cysts, or of their muscles by small cysts, must debilitate cattle and render them less fit for work than they otherwise would be. An interesting paper on this subject by Surgeon-Major J. T. C. Ross, F.R.C.S., will be found at p. 482, which gives a succinct view of the sanitary bearings of this question. This paper rather refers to the muscle cyst, but the hydatid cyst is more common. It was found by the Commission in Lahore in 11 out of 13 carcasses, and

HISTORICAL SKETCH. Dr. J. Cleghorn shows that in Mooltan 899 out of 2,109 cattle slaughtered by the Commissariat were infested by these cysts, or 42·6 per cent. The *post-mortem* examinations of cattle made in all parts of the Punjab revealed cysts most commonly of the hydatid or echinococcus kind.

These are the general results of the investigation made in the Punjab. The facts ascertained regarding each division of the province will now be stated briefly in chronological order.

DELHI DIVISION—(*Districts—Delhi, Goorgaon, and Kurnaul*).

Information regarding the districts of this Division is meagre; the town of Delhi was visited twice in July 1870, and a local investigation made on each occasion. The result was that a sporadic case of rinderpest was found in the city. The disease is here called *rorah*.

1870.

The Deputy Commissioner of Goorgaon reported on the 12th of December 1870 that a disease had broken out in that district characterised by "looseness of the bowels, running from the mouth, and, after a day or two, violent purging; entire refusal to eat; death ensuing within a week." This is evidently rinderpest. Evidence of a more explicit kind was obtained on occasion of a visit to the Kurnaul Stud in September 1870. *Mān* rinderpest and *rorah* (foot and mouth disease) had been lately prevailing in the town of Kurnaul, and the former has been always known, occurring in an epizootic form every third or fourth year. The officers in charge of the Stud (Colonel Parrott and Veterinary Surgeon Kettlewell) had not had their attention drawn to the subject.

HISSAR DIVISION—(*Districts—Hissar, Rohtuck, and Sirsa*).

Very valuable information regarding cattle murrains was obtained on occasion of the visit of the Commission to the Hissar Stud Farm in July 1870. One witness in particular—Hansari, a Salootree—gave most excellent evidence, showing that *sirruk* (rinderpest), *goli* (quarter-ill), *pheepree* (pleuro-pneumonia), and *rorah* or *khoora-phutta* (foot and mouth disease) have always been known in that locality. He stated that his elder brother, who was also a cow doctor, knew of *sirruk* in the year 1810, and that he himself had since 1830 seen it attack the cattle in and near Hissar every fourth or fifth year. It had not occurred there during the last three years.

1810.

1830.

In April 1864, Mr. H. Dawson, v. s., reported on the epizootic which had lately prevailed among the cattle at Hissar, and from the *post-mortem* appearances noted, it is probable that more than one kind of disease had occurred, namely, quarter-ill and pleuro-pneumonia. So thoroughly convinced was Mr. Dawson of the contagious nature of these murrains, that he recommended, in the event of their again appearing amongst the Hissar cattle, that the diseased animals should be at once destroyed, and the healthy cattle broken up into small herds and sent to fresh grazing ground, never being allowed to graze for any considerable time in one place. In 1866 Mr. Dawson was called upon to report on the cattle murrains which had been prevailing in Hissar. His report enters fully into symptoms and treatment, and it is evident that the disease of which he writes was quarter-ill, which he considers contagious.

1864.

1866.

The annexed return of deaths among cattle during the ten years 1860—69 (page 457) shows a great mortality among them. In a stock averaging 9,930 head, there is a yearly average loss of 1,439, or 14·49 per cent. *Sirruk, pheepree, goli,* and *khoora-phutta* are noted as causes of death of almost yearly occurrence.

1860 to 1869.

No information was obtained regarding the other districts of the Division.

UMBALLA DIVISION—(*Districts—Umballa, Loodianah, and Simla*). HISTORICAL SKETCH.

It is stated in an official communication from the Deputy Commissioner of Loodianah that a form of cattle disease called *newabee*, whose alleged symptoms resemble those of rinderpest, prevailed in the district twelve or thirteen years previously. It is also stated that *moonkhee* and *rorah* occur every two or three years.

1851.

Mokh or *munnoon* appeared in this district in March 1870, in the Jagraon Tehseel. It became epidemic in that Tehseel, affecting 42 villages, and spread to the adjoining Tehseels of Loodianah and Samrala. The disease carried off 1,851 head of cattle in the Jugraon Tehseel and 225 in the Samrala, and it was said to have been imported into the latter by diseased cattle brought from Hissar. The disease was said to be "fast disappearing" in May, but a limited outbreak, apparently of foot and mouth disease, was reported from one village in September.

1870.

Cattle disease prevailed widely in the district of Umballa in the months of June to November 1870. Both rinderpest and foot and mouth disease are noted. The general result, as shown in the table printed at page 460, is that in 73 villages, in a stock of 30,867 head, 4,608 were attacked, or 13 per cent.; and 1,146 died, or 3 per cent. of stock and 27 per cent. of attacked.

In October of this year, rinderpest (*burra rog*) and foot and mouth disease (*laroo*) were reported to exist in the villages of Kotkhall and Culteena, in the Rajah of Keonthal's territory, in the Simla District. Segregation appears to have been successfully carried out. No other localities in the district have been known to be attacked.

JULLUNDUR DIVISION—(*Districts—Jullundur, Hushiarpore, and Kangra*).

In June 1870 foot and mouth disease occurred among the Commissariat slaughter cattle at Dhurmsala. The disease appears to have been imported from Jullundur. In this district both *mogh*, rinderpest, and foot and mouth disease appear to have prevailed generally throughout the district during the years 1869 and 1870, though the number of deaths reported, 50 and 87, is small as compared with other districts. The Deputy Commissioner of Kangra reported in August 1870 that cattle plague existed to a large extent in his district. Captain Harcourt reported that *koorug-moorug* (foot and mouth disease) prevailed extensively in the Kooloo and Plach Tehseels of this district; 250 cattle had died in the former and 62 in the latter. It is open to question whether the disease which caused such a large mortality was foot and mouth disease only; but this form is distinctly named and described, and in the absence of exact data or of a professional inquiry, it is useless to speculate.

1869.
1870.

UMRITSUR DIVISION—(*Districts—Umritsur, Goordaspore, and Sealkote*).

The information obtained from this Division is full and interesting. The inhabitants of the village Vadala, six miles from Umritsur, which was visited by the Commission in August 1870, stated that *munnoon* (rinderpest) and *paira* foot and mouth disease, have been known for many years in that district. A farmer of that village asserted that the disease *munnoon* had appeared in his village years ago, also in his father's and grandfather's time. Another man, aged 60, said that he first saw the disease when he was ten years old —1820, again when he was 30 years—1840, and again ten years ago—1860. Rinderpest prevailed in village Choballa of Anjalla Tehseel, Umritsur District, in May 1870, and continued to prevail till July. Fortnightly returns were received from this district from 1st September to 15th December 1870, showing 155 deaths in 218 attacked—71·1 per cent. The symptoms described by the Deputy Commissioner are those of rinderpest. In Goordaspore also, disease prevailed widely during the year. Fortnightly reports from 1st September to

1820.
1840.
1860.
1870.

HISTORICAL SKETCH. 30th November show 1,107 deaths out of 4,102 attacked—26·98 per cent. A variety of diseases are given, but rinderpest and foot and mouth disease are prominent among them.

As early as March 1870, murrain broke out in the Duska Tehseel of the Sealkote District, at a place about half-way between Sealkote and Gujranwalla, on the high road: 2,327 cattle are reported to have died during the months March to July. It was believed that the disease was brought from the Gujranwalla District. From the symptoms of the disease, as described by Sub-Assistant Surgeon Futteh Sing, it appears that both rinderpest (*munnoon*) and foot and mouth disease (*mohkur*) prevailed simultaneously. Fortnightly returns from 16th August to 30th November 1870 give a mortality of 3,112 among 3,914 attacked, or 79·5 per cent.

These returns were collected by Sub-Assistant Surgeon Futteh Sing, who made a careful investigation into the circumstances of this murrain.

LAHORE DIVISION—(*Districts—Lahore, Gujranwalla, and Ferozepore*).

The district of Gujranwalla in this Division holds a prominent position in the annals of cattle murrain in the Punjab. As early as the first decade of this century, there is oral evidence of the prevalence of *andar-ka-matah*, rinderpest. An inhabitant of Shekhoopoora, 80 years of age, testified to the Commission that he had seen the disease before his beard began to grow. In this place the Commission found both rinderpest and pleuro-pneumonia existing, as also in Kokoa, a village adjoining. A chowdry of goallas in the city of Lahore testified that *munnoon* (rinderpest) was known to his forefathers, and frequently appeared.

1805.

He had himself seen eight or nine outbreaks in a lifetime of 35 years. He had lost 11 cattle of it in 1861. Similar evidence was recorded regarding *pheepree* or pleuro-pneumonia. In the hot weather of 1869 a most virulent murrain broke out on the bar of Gujranwalla. This bar is a vast grazing ground where cattle are herded and collected on *rukhs* or pasture farms. This system of herding is purely nomadic, the herds being driven about in search of water; and where this precious element exists, a temporary village of huts is rapidly thrown up. In seasons of drought both pasture and water are bad, and the cattle are liable to a disease called *bhooknee*, whose symptoms are incessant purging, wasting, and death. It was this disease which, during the year ending March 1870, killed 40,525 cattle, valued at Rs. 9,51,298. Cases of it were studied by Dr. Quinnell, Civil Surgeon of Gujranwalla, who noted excessive purging and emaciation as the prominent symptoms. Swelling of the dewlap and voracious appetite were observed in some cases. The disease was not supposed to be infectious, but to depend on local influences, and the *post-mortem* appearances indicated anæmia, mal-assimilation and mal-nutrition. The evidence recorded by the Commission was to the same effect. *Bhooknee* and *peer* (rinderpest) were carefully distinguished by the people, and the differential symptoms given. The people were not so familiar with the former as with the latter. They asserted that *bhooknee* was not known until 1869; had begun in the Sarwal district, and spread thence into Gujranwalla and Jhung, and in some cases the somewhat similar symptoms of *bhooknee* and rinderpest were mixed up.

1861.

1869.

Rinderpest is said to have prevailed in Lahore in 1869.

1870.

In March 1870 murrain was reported to have again broken out on the Gujranwalla bar, but the disease seems to have died out in May. Rinderpest and pleuro-pneumonia were, however, found prevailing in August 1870, and evidence was obtained of the existence of the former in the month of April in Lahore. Another outbreak of murrain was reported from the Kamokie Pergunnah of Gujranwalla in September. It is supposed to have been pleuro-pneumonia, and it is stated that 100 head of cattle had died within 24 days in two villages named Ghogah and Oode, a few miles on either side of the Gujranwalla and Shekhoopoora Road. In another report received

in September *bhooknee* (diarrhœa) was said to be spreading from the bar upwards in the Nowshera Pergunnah, and it was added that in Hafizabad and on the bar pleuro-pneumonia was still causing loss. Cattle disease appeared in May in three pergunnahs of the Ferozepore District, and in two months 4,664 cattle are reported to have died. From the symptoms described by the Civil Surgeon, the disease appears to have been rinderpest. HISTORICAL SKETCH

MOOLTAN DIVISION—(*Districts—Mooltan, Jhung, Googaira, and Moozuffergurh*).

The history of murrain in this Division repeats that of the last almost exactly: rinderpest from time immemorial, a well-known and frequently-prevalent disease; *bhooknee* severely raging in 1869 on the bar, and both rinderpest, pleuro-pneumonia, and black quarter (*suth*) prevailing in 1870. Many oral records of past outbreaks during the spent portion of this century were noted by the Commission in conversations with the people in these villages, particularly the years 1820, 1830, 1840, and 1862; and rinderpest was seen both in the districts of Montgomery and Jhung, and its identity verified by *post-mortem* examination. The mortality from *bhooknee* had been great. In the Chinote Tehseel 14,795 head of cattle were lost in 1869, valued at Rs. 3,51,215. This disease was generally said not to have occurred before the year 1867, but this is doubtful. Detailed evidence regarding diseases of cattle was recorded in both the Jhung and Montgomery Districts, and much accurate and interesting information regarding the five common forms—rinderpest, foot and mouth disease, *bhooknee*, pleuro-pneumonia, and black quarter—will be found in the sequel.

RAWULPINDEE DIVISION—(*Districts—Rawulpindee, Jheelum, Goozerat, and Shahpore*).

Information from this Division is scanty. A report received from Murree in August 1870 shows that rinderpest and foot and mouth disease are known in the district, but no facts regarding prevalence are given. In Rawulpindee rinderpest broke out among the Commissariat cattle in December. The symptoms and *post-mortem* appearances were carefully studied by Veterinary Surgeon Moir.

No information has been obtained from the *Derajat* and *Peshawur Divisions;* but in the face of the evidence above summarised, it cannot be concluded that murrain is absent from these parts.

Cattle disease was also said to have prevailed in Usufzai in 1869, but no details were obtained from the Punjab Government.

DELHI.

DELHI DIVISION.

J. H. B. Hallen, Esq.

From J. H. B. HALLEN, Esq., *President, Cattle Plague Commission, to the Secretary to the Government of India, Home Dept.,*—(*No.* 312, *dated 24th May* 1870).

I have the honor to state, for the information of His Excellency the Governor General in Council, that, on being given to understand from several sources that cattle murrain had been for some time past prevailing in certain portions of the Punjab, I applied to the Military Secretary to the Viceroy for permission to visit that province, with a view to extend the Commission's operations thither. On the 16th instant I was favored with the telegram, copy of which is given in the margin for easy reference, authorizing the Commission to proceed to the Punjab.

"If you think necessary, and have authentic information that disease is raging, you may go to Punjab."

2. On receipt of this order, I at once telegraphed to the Commissioners of the Lahore and Mooltan Divisions, asking for information as to the prevalence of murrain in any part of their respective divisions.

3. On the following day I received a telegram from the Commissioner of Lahore, informing me that disease had prevailed in Gujranwalla, but that it had disappeared in March last. No reply, however, was received from Mooltan; and on the 18th current I forwarded another telegram, by way of a reminder, to the Commissioner, soliciting a reply to my former message. The Commission was at Agra up to the 21st instant, having completed the inquiry there; and not receiving any answer from Mooltan, proceeded to Futtehpoor, in the North-Western Provinces, where murrain has been prevailing for some time past.

4. Yesterday I received a communication from the Officiating Commissioner and Superintendent of the Lahore Division, forwarding a report from the Deputy Commissioner of Gujranwalla, bearing date the 5th instant, wherein it is stated that 46,525 head of cattle, exclusive of sheep and goats, had died of murrain, and that the loss to the owners on this account has been about 9½ lakhs of rupees. I beg leave to submit a copy of this paper for the information of the Government, and solicit the favor of your obtaining the orders of His Excellency in Council for placing the province of the Punjab within the sphere of inquiry of the Cattle Plague Commission, as in that case they can have access to all the records of past murrains, and have every opportunity of ascertaining the nature of the murrain that has recently been raging in Gujranwalla, and probably in other districts in the Punjab.

Lieut. Col. H. P. Babbage.

From LIEUT.-COLONEL H. P. BABBAGE, *Offg. Depy. Commr., Gujranwalla, to the Officiating Commissioner and Superintendent, Lahore Division,*—(*No.* 140, *dated 5th May* 1870).

I have the honor to state, in answer to your No. 121-1116 of the 3rd instant, and in continuation of my No. 65 of 9th March 1870, reporting that the cattle murrain had again appeared this year, that the murrain does not seem to have prevailed much this spring. It is said that no animal once attacked recovers; they languish sometimes for months, but surely die; and it may be that the spring season has aggravated the symptoms of sickly animals, and so led to the idea of the murrain again reviving; but, any way, I cannot find that any number of sound cattle, worth speaking of, have this year been attacked.

2. I have delayed this in order to add such statistics as I can gather of the loss caused by the murrain.

3. The putwarries were directed to inquire from the villages of their respective circles the number of cattle lost, without attempting any detailed enumeration and worrying the villagers by enumerating the remaining cattle; the loss is, perhaps, somewhat exaggerated, but may be taken as an approximation.

4. The result is that in the Hafizabad Tehseel cattle, as under, are reported to have died:—

	No.			Rs.
	4,236	buffaloes, male (*sunda*), value at	Rs. 30 each	... 1,27,080
	6,751	„ female (*muj*) „	„ 40 „	... 2,70,040
	4,221	bullocks „	„ 20 „	... 84,420
	31,317	cows „	„ 15 „	... 4,69,758
Total ...	46,525		Total	... 9,51,298

5. This does not include goats and sheep, but includes the loss during the whole twelve months up to the end of this spring, March 1870.

6. Taking the low average value I have assumed for each sort, the loss to the owners is about 9½ lakhs of rupees, with a corresponding loss to the class who, like our rukh con-

tractors, gain their living by grazing. Among these the rukh contractors are the large percentage; for, with the diminished number of cattle, the villagers have found their own herd sufficient, and had no surplus cattle to send to the rukhs as usual; and thus in 22 rukhs not a single head of cattle is reported to have grazed, and in all the others a reduced number. DELHI. Lieut. Col. H. P. Babbage.

N. B.—I would refer you to former correspondence concerning cattle murrain, especially to the report of Dr. Quinnell, the former Civil Surgeon, which was forwarded with my No. 436 of 20th October 1869.

From E. C. BAYLEY, Esq., *Secretary to the Government of India, Home Dept., to the President, Cattle Plague Commission,*—(*No.* 2891, *dated* 10*th June* 1870). E. C. Bayley, Esq.

I am directed to acknowledge the receipt of your letter dated the 24th ultimo, and in reply to state that, under the circumstances therein reported, the Governor General in Council is pleased to authorize the Cattle Plague Commission visiting the Punjab, in order to prosecute their inquiries into the causes of the murrain which prevailed in that province.

2. The necessary orders have been issued to the Government of the Punjab to afford the Commission every facility and assistance that may be required.

Delhi, 24th July 1870.

The Commission inspected a bullock this day about eight years old, property of Mr. James Skinner of Delhi. The symptoms were those of rinderpest—loss of appetite, thirst, discharge from the eyes, nose, and mouth, ears drooping, animal dull and listless, congestion and excoriations of the gums; the bullock has been ill for four days; purging has not yet commenced. At Delhi the disease has the name of *rorah*. Case of rinderpest. Called *rorah*.

From J. H. OLIVER, Esq., C. S. I., *Deputy Commissioner, Goorgaon, to the Cattle Plague Commission, Lahore,*—(*No.* 967, *dated* 12*th December* 1870). GOORGAON. J. H. Oliver, Esq.

Reports that a disease has broken out amongst the cattle of some of the villages in this district, from which several animals have died, particularly in the town of Bohora. The symptoms are,—looseness of the bowels and running from the mouth; after a day or two violent purging; entire refusal to eat; death ensuing within a week from illness.

Kurnaul, 6th September 1870. KURNAUL.

Two Lumberdars state that *mān* and *rorah* are two diseases which attack the cattle of the city of Kurnaul and its vicinity. *Mān* and *rorah*.

Rorah is always more or less present, but seldom kills an animal; and when it does, maggots are generally deposited in the mouth or feet. *Rorah*—foot and mouth disease.

The symptoms are accurately described by them; purging is never observed: about a month ago *mān* attacked the cattle. Symptoms. *Mān*—rinderpest.

Symptoms,—sore and rotten mouth, off feed, great thirst; after three days purging sets in; the fæces are green water-like, are ejected to a great distance, and are very offensive. After a day or two yellow-like matter and blood is in most cases passed with the dung. Symptoms. Duration of attack.

Animals die in 6 to 10 days; very few recover; about 400 or 500 have died. Now disease is gradually disappearing; all cattle are now able to go about and graze; all cattle of the town and vicinity graze together and are not sent to a distance to graze. 400 or 500 have died. Herding.

Mān may attack an animal a second time. Do not think the disease to be contagious; have seen several attacks of the disease. Outbreak occurs every 2nd, 3rd, and 4th year, but now and then an odd case appears by itself. The disease has been known for years—in the time of their grandfathers. Not a new disease. Second attack. Contagiousness. Occurs every 2nd, 3rd, or 4th year. History.

Buffaloes have suffered and died more than cattle, and our loss has therefore been great. More buffaloes than other cattle have died.

Colonel Parrott informs that he lost a cow last year from a severe form of *rorah*, and another cow attacked recovered. A death from *rorah*.

No epizöotic has lately occurred among the stud cattle. Colonel Parrott and Mr. Kettlewell, v. s., joined this Stud three years ago. No epizöotic among the stud cattle.

The number of cattle in Kurnaul is about 700. When *mān* is severe, nearly every beast attacked dies; when mild, 5 out of 20 die. Number of cattle in Kurnaul. Mortality from *mān*.

HISSAR.

HISSAR DIVISION.

H. Dawson, Esq.

From H. DAWSON, Esq., *Veterinary Surgeon, to the Superintendent of Studs, Kurnaul,—*
(*dated 23rd April* 1864).

I have the honor to forward for your information my report on the late epidemic at Hissar.

Symptoms.

The animal attacked separates itself from the rest of the herd, has a dejected look, profuse discharge of saliva from the mouth, and great enlargement of the glands of the head, neck, &c.; very often one, or perhaps two of the legs begin to swell; in this state the animal is very irritable and rushes at anybody attempting to approach it. I attribute this irritability to the suffering caused by the distressing nature of the complaint, and the animal feeling suffocated from the violent inflammation of the larynx. Excessive weakness soon shows itself, and the animal falls. On examination, the pulse is found to be hard and wiry, breathing accelerated, and the animal dies in 2 or 3 hours; in some cases death did not take place for 6 hours.

In many cases there was an absence of the throat symptoms; the animal showed symptoms of pleuro-pneumonia; in all, however, there were deposits in the cellular tissues.

Treatment.

From the extreme rapidity with which the cattle died on being attacked, it was impossible for medicine to operate properly. Tracheotomy was performed in the throat cases, but with no effect, and liquor ammoniæ used as a counter-irritant from the rapidity with which it raises a blister; the debility was treated with the usual stimulants, but without avail, the animal always dying as if no remedial measures had been tried.

Post-mortem appearances.—These, like the symptoms described, vary in all instances; where the throat was involved the larynx was always highly inflamed; in some ulcerated, the tracheal tubes filled with a thick frothy mucus, and the lungs slightly congested; but in cases that appeared similar to pleuro-pneumonia the lungs were completely hepatized. On opening the different swellings about the body, they were found to contain bloody serum. In other respects the different organs, such as the stomach, liver, kidneys, spleen, &c., were healthy.

General remarks.—Finding that medical treatment was powerless in arresting this disease, I resolved to try the effect of sanitary measures.

With this view, I suggested to Mr. Taylor that the different herds should be scattered about the district as much as possible, and never allowed to graze any considerable time in one place. This plan, I am glad to say, succeeded; the mortality became much lessened, the daily report showing 8 or 10 fresh cases, instead of 40 or 50 as formerly. By the time I left Hissar the disease had completely ceased. This epidemic seems to have prevailed throughout.

Hurrianah.

In the *leading* symptoms the disease called hurrianah bore a strong resemblance to the distemper known in England and to "inflamed lungs," the respiratory organs being chiefly involved in all the cases I saw at Hissar. The promptest treatment, however, failed to save a single animal.

The *cause* of the complaint it is very difficult to determine. I should fancy the cold nights and hot days may have been a predisposing cause, especially as the cattle attacked were mostly young stock, and unable to withstand the sudden changes of temperature.

In conclusion, I would beg to suggest that in case of another epidemic appearing amongst the cattle at Hissar, the best and safest plan would be to *at once* destroy the infected, and have the healthy cattle driven (in small herds) to fresh grazing ground: this would be an additional expense (for the time) to Government, as more herdsmen would be required; but the saving in cattle would amply compensate for the additional outlay.

Report on the symptoms of the disease which has lately appeared among the cattle of the Hissar Stud, and of the post-mortem appearances observed,—by Veterinary Surgeon H. DAWSON.

Mr. Taylor, the Officer in charge of the Cattle Stud at Hissar, requested me to examine cattle infected with the epidemic disease, and to make *post-mortem* examinations for the information of the Stud authorities.

The cattle affected were yearlings or 2 years old chiefly; they were apparently, up to the time of seizure, in good health. They were generally taken ill during the night, and in the morning were observed to be suffering from depression and uneasiness, but not pain. The functions seemed arrested—rumination, defæcation, and micturition.

External appearances.

The breathing was hurried, very much so in some cases; glassy fluid ran from mouth and nostrils; eyes much injected. Presently the debility increased, and all the symptoms became aggravated. Emphysematous patches apparent on various parts of the body, chiefly on the loins and shoulders.

The abdomen became much distended and the animal died within 24 hours of the first appearance of sickness. There was not any fever, tetanus, or manifestation of pain throughout.

Post-mortem appearances.—The bodies were swollen, and exhibited one or two emphysematous patches. On removing the skin, the portions of cellular tissue answering the emphysema

were found to be *black*, and in the early stage of gangrene, the emphysema being the result of decomposition. Hissar. H. Dawson, Esq. Subcutaneous appearances.

The thorax was in one case filled with clotted blood, which was very black and apparently imperfectly organized. Thorax.

The cavities of the heart were filled with clots of dark blood, all these clots being particularly decomposed and filled with air bubbles, though death had taken place but 2 or 3 hours before. Heart.

Both lungs would be much congested, though not in a state of acute inflammation; this state resembled that of the subcutaneous cellular tissue, and was, I imagine, the early stage of gangrene. Lungs.

The rumen was immensely full of undigested fermented grass and the gaseous products of decomposition, which on escaping by the puncture of the knife, were observed to be most offensive. The small intestines contained in places some fæcal matter, but their mucous membranes were softened and disintegrated, and in most places covered with muco-purulent matters which in some cases quite filled the canal. The large intestines exhibited the same conditions, though the mucous membranes were not in so advanced a state of disease as that of the small intestines. Abdomen.

Spleen, liver, and kidneys were healthy, as well as all other stomachs, but the rumen, larynx, trachea, and œsophagus were healthy; but in one instance the cellular tissue round the larynx was in the state of mortification mentioned above.

The only microscopical appearances of note were, that the mucous membrane of the small intestines presented no trace of its natural appearance, being nothing but *pus*, and the *debris* of disintegrated mucous cells. Microscopical appearances.

The blood corpuscles were healthy apparently. I am of opinion that the disease was one of *blood poisoning*, from absorption of the gaseous products of the fermentation of the vegetable undigested contents of the rumen. That there was blood poisoning, I think is certified by the state of the mucous membranes of the intestines and the gangrenous state of the cellular tissues of the body and of the lungs in some cases.

The walls of the rumen were apparently paralyzed by distension and quite unable to expel their contents, which contents remained fermenting, and by that fermentation increasing the distension, until the blood poisoning, and consequently death were the result.

The treatment adopted was the administration of purgatives, which in every instance (that I saw) failed of their effects but one, and in that case there was recovery.

Stimulants were given to excite the rumen to action, but they failed. In five cases the rumen was opened, at the suggestion of Mr. Taylor, by me, by incision along the flank and the contents removed, and in two of these recovery was the result;* in the remaining three, the cattle were in so advanced a stage of the disease that they were unable to stand; they all died shortly after the operation, not from that, but from the effects of the malady.† Mr. Taylor stopped the disease by putting the cattle on a very limited supply of grass, only permitting them half an hour grazing per diem.

* Died eventually from prostration.

† For the time only.

From H. DAWSON, Esq., *Veterinary Surgeon, Home Stud, Kurnaul, to the Secretary to Government, Punjab,—(dated June* 1865).

I have the honor to forward, for the information of His Honor the Lieutenant Governor of the Punjab, a few rules on cattle murrain. I have endeavoured in the symptoms, treatment, &c., &c., to give plain and easily understood directions, avoiding technicalities as much as possible.

2. On referring to my former reports on murrain, copies of which have already been forwarded to you, you will be good enough to observe that I do not place much dependence on medical treatment, the extreme virulence of the disease giving so little time for medicines to have their proper effect; however, I am in hopes that by carrying out the general treatment laid down by me a great many cattle may be saved; but everything will depend on the zemindars applying the remedies without the least delay. I think, however, that the zemindars would find great benefit from the plan advocated by me of *moving the cattle about the country*, murrain being very contagious: too much importance cannot be attached to this advice, as I have invariably found that the cattle so treated preserved their health in a greater degree than those allowed to remain in the locality where murrain first made its appearance.

3. I am afraid that the rules forwarded will, on perusal, appear rather meagre in detail; but had I entered minutely into all the symptoms, &c., of the various phases of the disease, it would, in my opinion, have done away with the object intended, and only tended to confuse the non-professional reader.

HISSAR. H. Dawson, Esq.

4. The few medicines required can (with the exception of Epsom salts) be easily obtained by the natives. In case of a fresh outbreak of murrain, Epsom salts would, I imagine be difficult to procure, except through the Government. This medicine is cheap, but large, quantities would be required where many animals are attacked. I would therefore suggest that a quantity (when required) should be stored in the district dispensaries and issued to the zemindars on payment for the same.

* * * * * *

6. In conclusion, I beg to state that, should I again be called upon to attend Government cattle with murrain, I shall certainly try the experiment of pegging the healthy stock as a preventive, as I am convinced it would be of service in counteracting the tendency towards congestion of the lungs, and thereby be the means of saving many cattle that were attacked with this phase of murrain. Should I prove successful, or discover any thing further relative to the treatment of this disease, I shall be happy to forward you a report on the same.

PUNJAB. T. H. Thornton, Esq.

Circular No. 4—362, *dated* 15*th February*, 1866, *from* T. H. THORNTON, Esq., *Secretary to Government, Punjab, to all Commissioners in the Punjab.*

Symptoms.

The following simple rules regarding the symptoms of *cattle murrain*, and the precautions and treatment which should be adopted on its occurrence, have been drawn up by Mr. Veterinary Surgeon Dawson, of the Stud Department, who has had considerable experience in the treatment of the disease in the Government Cattle Farm at Hissar.

The rules are circulated herewith for general information.

Copies of a vernacular translation accompany for circulation amongst the native community. Care has been taken to make the translation as simple and intelligible as possible, but District Officers should see that the rules are well understood; and, on the appearance of the disease, they should use every endeavour to induce the adoption of the measures recommended.

KURNAUL. H. Dawson, Esq.

From H. DAWSON, Esq., *Veterinary Surgeon, Home Stud, Kurnaul, to the Secretary to Government, Punjab,—(dated June* 1865.)

CATTLE MURRAIN.

Symptoms.

The first symptom particularly observed is the dulness of the animal attacked, separating itself from the herd, and standing with head depressed, and a quantity of thin saliva running from the mouth. On going near the animal it very often becomes violently excited and rushes at the nearest person. There is great and rapid loss of strength, the animal soon becoming unable to move; in some cases the belly is greatly distended, and swellings appear on the shoulders and quarters. In all cases there is great and often obstinate constipation; rumination ceases; and, unless relief is obtained, the animal rapidly sinks, and dies in a few hours.

Treatment.

The first thing to be done is to remove the sick cattle at once from the herd, and place them in a *clean, airy* shed. If the belly is much distended, an opening should be made in the rumen (or first stomach) with a lancet, or common knife, to allow of the escape of gas. The wound should be kept open by the introduction of a trocar. A trocar can be made of tin. It is a tube about four or five inches long, with a shield about two inches from the top, to prevent it slipping into the stomach. The operation of puncturing is very simple. The wound is made on the *left* side, midway between the haunch or hip-bone and the last rib, and a span below the spine. The tube should be placed in the wound, and, after the gas has escaped, the wound should be closed by placing a piece of coarse cloth smeared with tar over it. Should no gas escape, the contents of the stomach should be removed. This can be done by enlarging the wound, and introducing the hand. In all cases a purgative should be given, consisting 1 lb. of Epsom salts, or 1 lb. Glauber salts, or 1 pint of common or linseed oil, repeated in an hour until the bowels are opened. Where there is swelling of the shoulders or quarters, and the skin is loose or wrinkled, and crackles on pressure, the swellings should be slit up and the wounds dressed with strong salt and water, or tar and salt; the swellings about the *joints* should be rubbed with mustard and spirits of turpentine. If the throat is affected, and much pain and distress is evinced, a blister should at once be applied, made from the native blistering fly. Should the animal recover, it will require plenty of good generous food.

General remarks.—When murrain first appears, the healthy cattle should at once be driven to some distance from the place where it first broke out, and the grazing changed as often as possible. At night the herd should be driven to as high and dry a piece of land as can be found, and on no account should the cattle return to the village until the disease has disappeared entirely. The sick cattle should be treated *at once:* no time should be lost, as the disease soon proves fatal; and the only chance of saving the animal is the promptest treatment.

KURNAUL. H. DAWSON, Esq.

The cattle should not be allowed to graze more than a day or two in one place; in fact the more they are moved about, the greater will be the chance of keeping them free from this disease. Murrain being very contagious, the zemindars should keep a strict watch over their herds, and remove at once any animal showing signs of this disease.

Note.—For young stock (yearlings, &c.) *half* the quantity of Epsom salts, &c., should be given.

The operation of "pegging," as practised in the agricultural districts of England, would be attended with beneficial results in this disease. In all *post-mortem* examinations made by me during the prevalence of murrain, I have in nearly every case found that the lungs were involved. "Pegging" acts as a counter-irritant by the action of hellebore-root introduced into a wound made in the dewlap; and, therefore, my plan would be to operate on *all* the cattle immediately that murrain appears amongst them. I do not imagine that this would prove a *specific*, but I believe, from the great irritation caused by the hellebore, it would certainly render the animals less liable to the complaint, especially if the cattle attacked showed symptoms (as they often do) of inflamed lungs. In England "pegging" is largely practised by cattle proprietors, particularly on their young stock, to prevent pleuro-pneumonia.

The operation of pegging is very simple. A longitudinal incision is made low down on the dewlap, and into that is inserted a small piece of black hellebore-root, tied in the centre with a piece of string or twine having two ends; the root is made to lie across the wound, as it were, so as to prevent it falling out. The two ends of the string hang from the wound, and are required to remove the hellebore after it has effected its purpose. Any native could learn this operation in a few minutes. The irritation caused by the hellebore is very great, and the dewlap swells extensively. After a day or two suppuration ensues, the "peg" is removed, and the wound kept clean and allowed to heal.

Evidence recorded at Hissar, 22nd July 1870. HISSAR.

PEMA GOWALA, herdsman, about 68 years old, states,—I have served Government at the Cattle Stud in Hissar for 52 years, and have seen the stud cattle attacked with several diseases, *viz.*—

1*st*. *Goli*.—Sudden swelling of one hind-quarter, which extends over the loins, back, and shoulders. When the swelling is pressed, it makes a cracking noise like pressing salt. The animal is very lame on the leg attacked. The respiration becomes very much accelerated, and the animal shows great distress, and is evidently in great pain. We have given medicine, but it is of no use, and have also fired and cut the swelling, but without effect. When the swelling is cut, the blood is all black and thick. When this disease breaks out among the stock the cattle are moved from place to place, with a view of giving them exercise and preventing the lameness coming on, and by moving them about they have not time to eat too much. When they have been driven over ground where the pasturage is scanty, there is less chance of the disease continuing amongst them. This disease does not occur every year, but when the grass is unusually rich and plentiful. If 20 animals are attacked by this disease they all die, and treatment is of no avail. The only way to prevent the spread of the disease is to keep the yet healthy animals moving about and give them limited pasture. I was not told by any one of the nature, symptoms, treatment, and means for the prevention of this disease. All I have said is the result of my own practical experience.

Goli (quarter-ill.)
Symptoms.
Medicines of no use.
Preventive treatment.
Cause, luxuriant pasture.

2*nd*. *Sirruk*.—First purging and intense thirst and heavy breathing. The stools have an offensive smell, but the mouth remains sweet, except in severe cases, when it becomes sore and stinking. The animals die in a few days if the purging is not stopped. I give the following medicine:—

Sirruk.
Symptoms.

Opium ½ tolah, black pepper 3 pice worth, butter (*ad lib.*) This medicine is given 3 or 4 times (one dose a day), and the animal, as a rule, recovers in 5 or 6 days. No *sirruk* prevails just now at all; when it appears, it generally comes in January and February.

Treatment.

3*rd*. *Rorah* (*or khoora-phutta*).—No animals die from this disease. We make a mixture of *urud* flower and *til* oil, and apply it as a mixture to the feet and rub the mouth with it.

Khoora-phutta (*rorah*), foot and mouth disease.
Treatment.

4*th*. *Tilli*.—Liver and spleen disease, in which both become much enlarged.

Tilli.

5*th* *Jaria*.—Enlargement of the glands of the throat; firing is the remedy.

Jaria.

The witness was questioned most closely on the subject of rinderpest, and at first did not seem acquainted with the symptoms of the disease. With the symptoms of foot and mouth disease, he is well acquainted, and describes them under the names of *rorah* and *chupka* (from the mouth trembling) and *sitlah bhawani*. He never heard the name of *vedun* or *joti* or *matak* (among cattle) or *bussunto*. On further careful examination, and on having the symptoms of rinderpest minutely described to him, the witness stated that the symptoms described to him were those of *sirruk*, which disease appears every 2nd, 3rd, or 4th year, rather in a mild or severe form; but in the most severe attacks he estimates the loss from 10 to 20 per cent. of those attacked.

HISSAR.

The witness evidently classifies diarrhœa, dysentery, and rinderpest under the one head *sirruk*. This will explain his statement above, that, as a rule, cattle recover from *sirruk* in 6 days.

Pheepree (pleuro-pneumonia).

6.—*Pheepree* is another disease to which the stud cattle are liable. When an animal dies from this disease, the lungs are found to be heavy and full of cavities filled with matter; but of 20 attacked with *pheepree* from 5 to 10 die. We give English medicine for this disease.

[*N. B.*—The Commission saw a case of *pheepree*, and found it to be *pleuro-pneumonia*.]

HANSARI, Mussulman Salootree, states,—I have been in the Government Stud since the year 1840, with the exception of 3 years of the time.

Names of diseases.

The names of cattle diseases are *goli*, *ghooldia*, *tilli* (spleen), *sirruk*, *pheepree*, *peelia*, *rorah djarra* (grass worms in spittle), *biloou* (worms in water), *garmi*, *bai*, *hoobuk* or *gooldun* (immense swelling of throat), *chupka* and *bachka* (swelling of mouth only, no purging).

Goli (quarter-ill).

1. *Goli.*—This name is given to it, as God strikes the part as it were with a bullet and the part swells up.

Symptoms.

The swelling generally is on the hind quarters, but any other part of the body may be first attacked. If it happens to be in the neighbourhood of the heart, the animal at once dies; but if on the hind quarters, it may linger for 4 or 5 hours. It occurs at any time of the year, and attacks cattle of all ages; but those in the very best condition are the ones attacked most; treatment of any kind is of no avail to those attacked. The general Veterinary Surgeon and the Native Haqueems have all tried their remedies in vain. All that can be done is to prevent the spread of the disease among those that are well, by removing the herd to scanty pasturage,

No remedy.

Preventive treatment.

keeping them moving about from place to place and allowing them no rest, but giving them much exercise and little food, so as to bring them down in condition.

Pheepree (pleuro-pneumonia).

2. *Pheepree.*—Coughing and blowing. The noise of the blowing can be heard some distance off.

Symptoms.

Three kinds.

There are three kinds :—

1*st.*—When the lungs become black;

2*nd.*—When the lungs adhere to the walls of the chest; and

3*rd.*—When the lungs are found to be hard and heavy, and if cut into, stone or marble-like in appearance.

Mortality.

The rate of mortality is about 75 per cent. of those attacked. This disease is always to some extent present among the cattle, but breaks out with great violence every fourth or fifth year.

Seasons of.

It breaks out generally in the hot weather. During the time of my service, most cattle have died from *goli* and *sirruk* (no medicines are found to be of avail in *sirruk*).

Sirruk.

Symptoms.

The symptoms described by the witness are precisely those of rinderpest, *viz.*, purging, soreness of mouth, most offensive breath and stools, death in from 5 to 12 days. On opening the body, the fourth stomach is found to be rotten and covered with yellow saffron-like stuff. The small intestines and cœcum (*anri aut*) are rotten. The mortality when severest is upwards of 80 per cent. This disease comes every 4th or 5th year. Our cattle feed on pastures by themselves, but it sometimes happens that a cow or bullock of a neighbouring village may come amongst our herd. This disease occurs also among the village cattle. We know the disease to be contagious, and both we and the villagers carefully separate affected cattle. This disease has not existed here for three years, and there is no case of it at present. I have known the disease of my own knowledge for the last 40 years, and my elder brother, who was also a cattle-doctor (Salootree), knew of it 20 years before I became acquainted with it.

Occurs every 4th or 5th year.

Is contagious.

Not occurred during the last 3 years.

Known since 1810.

Hides.

All hides of dead animals are taken by the Stud chamars and put in the godown, and afterwards sold.

Cattle poisoning.

Cattle poisoning is unknown.

Rorah (foot and mouth disease).

The symptoms of *rorah* (foot and mouth disease) are, increased spittle, sore feet and mouth. When very weak cattle are attacked, 5 per cent. may die, but healthy cattle don't die. When the mouth only is sore, it is called *chupka* or *bachka*. When both mouth and feet are affected, it is called *rorah*. *Biloou* is produced by drinking worms in water.

Symptoms.

Mortality.

Biloou.

Cause.

Symptoms.

Treatment

Symptoms: loss of power in limbs; animals lie down; not able to rise for two or three days; skin becomes dark and light (hide bound). Treatment: ghee and molasses. Seldom any mortality connected with this disease.

Hubuk or *gooldun.*

Symptoms.

Treatment.

Hubuk (or *gooldun*). Symptoms: an immense swelling of the throat, external and internal. Treatment: sometimes open with a knife and let out bloody watery matter. If the swelling is not very great, simply firing and blisters.

Gooldia.

Symptoms.

Treatment.

Gooldia, an affection of the throat, which becomes swollen from the presence of yellow water and the patient breathes with great difficulty; the rattling noise in breathing can be heard many yards off. A yellow water is found in the frontal sinuses. Treatment: blisters and

firing. The Veterinary Surgeons have opened the windpipe without avail: 80 per cent. died. I have seen the disease twice in 40 years. It has been my habit to make *post-mortem* examinations of all cattle which have died in the Stud since I became Salootree. Hissar.

[*N. B.*—The evidence of this witness is most valuable.]

DUNGA DAROGAH, has been in the Stud since 1838, and has seen from his childhood cattle affected with the diseases *sirruk*, *pheepree*, and *rorah*. His father also knew these diseases.

SEEHAM PALI, has served at the Hissar Stud for 28 years, and has always been acquainted with *sirruk*, *pheepree*, and *rorah*.

From MAJOR J. ROBINSON, *in charge Cattle Farm, Hissar, to the President, Cattle Plague Commission, Meerut,—(No.* 153, *dated the 9th August* 1870). Major J. Robinson.

In reply to his No. 123 P, dated 28th July 1870, has the honor to return Form No. A duly filled in.

FORM No. A.

Showing number of cattle and number of deaths from different diseases during the last ten years in Hissar Cattle Farm.

1	2	Number of Deaths from Disease.														
Year.	Total number of cattle.	3 "Sirruk." No. of deaths from Rinderpest.	4 "Pheepree." Pleuro-pneumonia.	5 "Goli." Black quarter.	6 "Rorah." "Chuplea," "Burkha," foot and mouth disease.	7 "Goodlia" (Swelled throat.)	8 "Tilli," (Spleen and Liver.)	9 "Peelia" (Jaundice.)	10 "Jaria."	11 "Billoaa."	12 "Gurmi" (Fever.)	13 "Bai" (Rheumatism.)	14 Hubuk or Goldun, immense swelling of throat.	15 Starvation.	16 Other causes.	
1860 ...	11,362	500	...	...	...	...	...	...	...	...	509	...	...	2,472	...	
1861 ...	8,674	125	200	...	...	175	52	...	...	...	...	...	...	...	200	
1862 ...	8,882	...	...	183	20	...	30	...	...	...	...	...	...	...	...	
1863 ...	9,961	62	100	...	71	...	80	55	...	...	30	...	9	...	160	
1864 ...	11,175	200	160	1,000	...	...	...	38	...	...	40	20	...	...	20	
1865 ...	9,723	805	150	...	94	...	44	...	...	...	6	...	...	500	...	
1866 ...	9,959	...	301	...	40	21	65	100	...	...	99	44	...	...	240	
1867 ...	10,135	1,000	400	...	59	45	41	30	...	...	33	25	...	...	200	
1868 ...	9,468	300	62	...	...	...	...	...	...	...	38	...	...	...	281	
1869 ...	9,968	64	356	...	249	40	30	16	...	...	100	10	...	1,079	875	

UMBALLA DIVISION.

LOODIANAH: Lt. Col. W. R. Elliott.

From LIEUTENANT COLONEL W. R. ELLIOTT, *Deputy Commissioner, Loodianah, to the Secretary to Financial Commissioner, Punjab,—(No. 553, dated 26th May* 1870).

With reference to your docket No. 2533, dated 20th ultimo, to the address of Commissioner of the Umballa Division, I have the honor to state that General Taylor has instructed me to submit the required report on the prevalence of cattle disease in this district direct to you.

Distribution of disease.

2. The cattle disease known as *mokh* first showed itself in the village named Agwar Khwaja Bajoo, in the Jugraon Tehseel, in March 1870, whence it eventually spread and became epidemic in 42 villages of the same Tehseel and several villages of the adjoining Tehseel of Loodianah.

3. It still prevails in 24 villages of the Jugraon Tehseel.

Mortality.

4. The disease is said to have carried off a great number of cattle in the Jugraon Tehseel, *viz.*, 851 animals. The deaths of cattle in the Loodianah Tehseel from this disease are declared to be now fast abating there.

5. Two hundred and twenty-five head of cattle are reported to have died from this disease in the Sumrala Tehseel, where it is now also fast disappearing.

6. It is not known how the disease originated in the Jugraon Tehseel, but it is distinctly declared to have broken out in the Sumrala Tehseel, in consequence of some diseased cattle having been imported from Hissar.

Contagiousness.

7. The disease is universally pronounced to be both contagious and infectious, and from the first the people were enjoined to separate diseased from healthy cattle; they seem perfectly conscious of the need to do so.

Varieties of *mokh*.

8. There are said to be three distinct kinds of *mokh* or cattle disease. The most fatal is called *newabee;* it appears to be a sort of dysentery. Symptoms,—violent and incessant purging and passing blood in the evacuations. The next worst form of the disease is called *moonhkee*, where the mouth gets blistered, throat swells, and swallowing food becomes next to impossible; the third and lightest form of the disease is called *rora*. The symptoms are,—swelling of the feet, which is followed by the appearance of worms inside it, commencing just above the hoof.

9. The two least severe forms of the disease show themselves at intervals of 2 or 3 years, and at no particular season; but the most fatal description of the disease called *newabee* has not been known in the Loodianah District for 12 or 13 years, and very rarely shows itself; when it appears, it is at no particular season.

10. The disease generally proves fatal within a week; and should an animal be ill with it for a longer period, experience proves that its recovery is nearly certain.

Treatment.

11. Where the foot is attacked, the zemindars make the diseased animal walk in sand, and wash and soak the foot in the water used by dyers in coloring skins; the *keekur* bark steeped in this water is believed to benefit the diseased feet exceedingly.

12. The zemindars, as soon as an animal is attacked with this disease, feed it either on boiled *moth*, gram mixed with *goor*, or milk warmed and *goor* dissolved in the same, or *mash* ground and boiled, or chuppatees made of *mash* flour and then smeared with oil.

Cause.

13. It is not known what creates the disease. It appears and disappears at intervals of years, and, generally speaking, without any assignable reason.

No specific remedy is known to the people for the cure of this disease.

Kakoowara village, about 4 miles north-west of Loodianah,—visited August 5th, 1870.

Mannoon or *vaba* prevailing, but never before prevailed. First heard of it four months ago, 8 miles off.

SHEIK NADAH, aged about 45 years, states:—The disease which has attacked the cattle in this village is locally known as *mannoon* or *vaba*. This disease has never been in this village before, and we first heard of it four months ago at a place called Burriwall, about 8 miles off on the southern side of Loodianah. We never heard of this disease from our fathers, but we have often seen *rorah* (foot and mouth disease).

Symptoms.

The symptoms of *mannoon* are,—total loss of appetite, and dark-green-coloured purging commencing about the 2nd or 3rd day; no blood or mucus has been noticed in the stools, but there is great discharge from the mouth and eyes. [They say now from the nose, while two cases inspected by the Commission showed a discharge from the nose.] I have never examined the mouths of affected cattle to see whether they have sores there. The first animal attacked in the village was a buffalo belonging to Amin Khan; this was attacked a month ago. This buffalo went out to graze with all the other cattle in the village. The cattle of our village sometimes mix with the cattle of other villages. Cattle dealers frequently pass along the road through the village, but no cattle have been purchased by any of the villagers for six months.

Source and mode of spread.

LOODIANAH
Lt.-Col. W. R. Elliott

The road from the Kurreana ferry to Loodianah passes through this village. The last time the cattle dealers passed through the village (about two months ago), the cattle passed through the village without stopping.

Rorah (foot and mouth disease). Symptoms.

The symptoms of *rorah* (or foot and mouth disease) are,—swelling of the feet and mouth, or sometimes one of these symptoms only. The animals attacked with foot and mouth disease never die, and generally recover in 10 to 12 days. The treatment resorted to for *rorah* is, keeping the mouth clean with water and washing the feet with a solution of bark. Since the disease *mannoon* broke out in this village, seven animals (two buffaloes and five cows) have been attacked, of which 5 have already died and 2 are now dying; none of the other cattle in the village have been ill at all.

[REMARKS.—The evidence given by the inhabitants of Kakoowara was stated in a most clear and positive manner. It is evident that foot and mouth disease has been known many years in this district. The disease *mannoon* has clearly never been seen by these villagers before the present attack. In describing the symptoms of *mannoon*, they stated the mouth did not become sore, and that no blood was passed with dung. It should be remembered that up to this time they have seen only a few cases of *mannoon*, so their knowledge of the disease was limited; but when shown that the mouths of the two cattle at present sick are sore and excoriated, and that the dung of one of them contains blood, they at once allow that they had never thought of looking into the mouths or examining the dung of the sick cattle.

The *post-mortem* appearances of a carcass examined has clearly proved *mannoon* to be rinderpest; but the *post-mortem* appearances on the whole are not so well marked,—that is to say, the disease has not so generally attacked the different parts of the body, as has been usually noticed in other *post-mortem* examinations made by the Commission. C. P. C.]

Information regarding cattle disease in the Loodianah district supplied by the Deputy Commissioner,—dated 15th September 1870.

One animal died in village Seettowal, Elaqua Noorpoor, of *gal ghuttoo*, after four days' illness. The symptoms were, watering of the eyes and mouth, and labored breathing.

Rorah and *mokh* broke out in the village Hurron, Elaqua Machiwaras, on the 28th August; 22 cattle were attacked and only one died. The symptoms assigned indicate foot and mouth disease.

UMBALLA
Major J. S. Tighe

From MAJOR J. S. TIGHE, *Deputy Commissioner, Umballa, to the President, Cattle Plague Commission, Punjab,—(No. 756, dated 7th November* 1870).

Has the honor to forward the accompanying return of deaths of cattle, presumed from epilemic disease, in Umballa, with reference to his No. 142, dated 10th August 1870.

The total number of cattle in the district is about 500,000 in 2,324 villages; there appears to have been during the year dispase, more or less infectious, in 73 villages containing 30,868 head; of these 4,608 are reported to have been seized, or about 14 per cent.; of these seized 1,146 are reported to have died, or about 25 per cent.

Whenever a report of any epidemic is received, orders are always issued to endeavour to segregate the arrivals in the village, and to allow none to leave.

Of the difficulty in dealing with such cases, there is a prominent instance now in Umballa the Government having during the last few weeks lost over thirty-three horses in the artillery from an epidemic, or equal to 15 per cent. of the strength present; value to the State not less than Rs. 25,000.

UMBALLA.
Major J. S. Tighe.

Return of Cattle Disease of an epizootic nature prevailing in the Umballa District.

1	2	3	4	5	6	7	8	9	10
Name of District, Talook, Mouzah, or Village.	Name of disease in Vernacular or English.	Date of outbreak of disease.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.	Number of cattle belonging to the village.	Whether the disease is supposed to be infectious or not.	Remarks by the Cattle Plague Commission.
UMBALLA.									
Shahpoor	Rorá ...	August 1870 ...	19	6	6	7	160	Infectious.	*Monü* is the name generally given in the Punjab to cases of rinderpest, and *rorâ* to those of foot and mouth disease.
Ismailpoor	Ditto ...	Ditto ...	15	7	8	...	170	,,	
Punjokhra	Ditto ...	Ditto ...	16	9	5	2	400	,,	The symptoms recorded of the diseases named are meagre, so an opinion as to the nature of the other diseases *seerh*, *sallwa*, *chupla*, *burra-dookh*, *gulghotona*, and *shukum*, cannot be formed; but where the mortality noted is great, probably they were cases of rinderpest, and when slight, very likely foot and mouth disease.
Nuggul	Ditto ...	Ditto ...	20	8	9	3	500	,,	
JUGADREE.									
Khanpoor	Seerh ...	25th July 1870 ..	40	2	27	11	562	,,	
Burrie	Ditto ...	Ditto ...	35	...	35	..	575	,,	The name *rorâ* was also occasionally used, in the hearing of the Commission when in the Punjab, to describe rinderpest; so, doubtless, in this return is it in some instances likewise used.
Kauree	.....	.....	...	...	...	...	...	...	
Kochlow	Ditto ...	Ditto ...	27	...	27	...	345	,,	
Chundara	Dicto ...	Ditto ...	24	...	24	...	255	,,	
Tolakour	Ditto ...	14th August 1870	80	16	44	20	1,030	,,	
Moradpoor	Ditto ...	Ditto ...	7	2	5	...	125	,,	The deductions from the table cannot therefore be otherwise than very general. They are as follows :—
Ladana	Ditto ...	Ditto ...	10	3	6	1	400	,,	
Sarun	Ditto ...	1st July 1870 ...	500	...	450	50	750	,,	
Furreedpoor	Ditto ...	Ditto ...	95	5	...	90	249	,,	Attacked per cent. of stock 15
Chobootra	Sallwa ...	15th August 1870	6	6	...	...	125	,,	Died per cent. of stock ... ... 3·7
Munglee	Rorâ ...	12th ditto ...	57	7	20	30	850	,,	Died per cent. of attacked 34
ROOPUR.									The fact that cattle murrain was very prevalent and very fatal in the district among the latter half of 1870 is clearly indicated, and more clearly by the figures, imperfect as they appear to be, than by any description.
Khulalpoor	Monü ...	1st July 1870 ...	12	7	3	2	95	,,	
Futtehpoor	Ditto ...	1st August 1870	35	11	23	1	200	,,	
Burkonoo	Ditto ..	18th July ..	45	20	25	...	80	,,	
Owend	Ditto ...	1st June 1870 ...	149	82	41	26	552	,,	
Ruttongurh	Ditto ..	1st July ...	77	42	20	15	300	,,	
Mailote	Ditto ...	Ditto ...	60	15	25	20	250	,,	

Aźabad	...	*Ditto*	...	15th July	...	65	20	15	30	1,000	"		
Dhola	...	Ditto	...	2½ months	...	90	55	15	20	250	"		
Khiree	...	Ditto	...	3 ditto	...	80	60	20	...	150	"		
Assurpoor	...	Ditto	...	1 month	...	3	1	...	1	161	"		
Sumana	...	Ditto	...	1½ ditto	...	40	15	25	...	300	"		
Khoord	...	.....	...	.....	...	...	...	...	...	...	...		
Bhubulpoor	...	Monü	...	1 month	...	7	10	...	2	200	"		
Khurrur	...	.....	...	.....	...	...	...	...	...	...	...		
Muttour	...	Ditto	...	26th June	...	200	90	110	...	615	Unknown.		
Ditto	...	Rora	...	30th July	...	50	5	45	...	...	"		
Sohana	...	Monü	...	1st June 1870	...	500	200	300	...	1,285	"		
Ditto	...	Rora	...	Ditto	...	20	...	20	...	...	"		
Chujjoo	...	Monü	...	Unknown	...	200	100	50	...	...	"		
Magree	...	.....	...	.....	...	...	...	...	...	Not known.	"		
Jhalon	...	Chupla	...	1st June 1870	...	...	35	155	10	388	...		
Dhunas	...	Rora	...	From Sawun	...	200	7	9	4	250	"		
Moulee	...	Ditto	...	August	...	20	2	2	2	1,500	Infectious.		
Purch	...	Ditto	...	About 2 months	...	6	2	2	...	175	"		
Goulra	...	Ditto	...	Ditto	...	6	...	6	...	300	"		
Magree	...	.....	...	.....	...	...	...	10	...	...	...		
Kursan	...	Ditto	...	Ditto	...	4	2	...	...	150	"		
Bhanoo	...	Ditto	...	About 1½ month	...	20	8	7	5	150	"		
Suntpoora	...	Ditto	...	Ditto	...	50	20	10	20	150	"		
Jugulpoor	...	Ditto	...	Ditto	...	50	25	20	5	200	"		
NARAINGURH.													
Naraingurh	...	Rora	...	About 1 month	...	150	...	...	150	850	"		
		Burra-dookh	...										
Meahpoor	...	Rora	...	Ditto	...	10	...	...	10	210	"		
Ahmudpoor	...	Ditto	...	15 days	...	50	...	...	50	250	"		
Meahnajra	...	Ditto	...	Ditto	...	100	1	...	99	299	"		
Akburpoor	...	Ditto	...	Ditto	...	2	...	...	2	202	"		
Betahore	...	Burra-dookh	...	4 days	...	3	...	...	3	303	"		
Dhurma	...	Ditto	...	1 month	...	15	7	8	...	615	"		
Jutwar	...	Ditto	...	2 months	...	125	50	15	60	560	"		
Brahm	...	Ditto	...	20 days	...	70	...	...	70	270	"		
Magree	...	.....	...	.....	...	...	...	...	...	...	...		
Salapoor	...	Ditto	...	1 month	...	40	12	...	28	328	"		
Fazilpoor	...	Rora	...	20 days	...	40	...	...	40	240	"		
Kotelah	...	Ditto	...	1 month	...	20	...	8	12	320	"		
Kamplah	...	Ditto	...	10 days	...	50	...	...	50	350	"		
Majree	...	Ditto	...	Ditto	...	40	...	...	40	140	"		
Sarawa	...	Ditto	...	20 days	...	125	...	50	75	575	"		
Jegoolee	...	Ditto	...	Ditto	...	50	5	...	45	345	"		

Return of Cattle Disease in the Umballa District,—contd.

1	2	3	4	5	6	7	8	9	10
Name of District, Talook, Mouzah, and Village.	Name of disease in Vernacular or English.	Date of outbreak of disease.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.	Number of cattle belonging to the village.	Whether the disease is supposed to be infectious or not.	Remarks by the Cattle Plague Commission.
PEEPLEE.									
Kalwah	Rora ...	Sawun 1927 ...	100	5	95	...	900	Infectious.	
Mughohi	Ditto ...	Jeyt ...	30	7	15	8	400	,,	
Goodanee	Ditto ...	Bhador ...	50	1	29	20	550	,,	
Balawa	Ditto ...	8th August 1870	60	5	...	55	1,100	,,	
Zunpoor	Ditto ...	Jeyt 1927 ...	50	10	40	...	850	,,	
Thole	Ditto ...	Sawun ...	3	1	2	...	350	,,	
Kheree	Ditto ...	Bhador ...	5	5	...	...	204	,,	
Seelukhnee	Ditto ...	Jeyt 1927 ...	20	7	13	...	300	,,	
Nuglal	Ditto ...	Sawun ...	17	5	12	...	250	,,	
Chumoo	Gulghotona ...	Ditto ...	15	5	10	...	220	Not infectious.	
Jharpoora ..	Durd Gulghotona / Sheekun ...	Ditto ...	2	2	...	...	150	,,	
Chupra	Ditto ...	Jeyt ...	25	1	24	...	375	,,	
Mutiara	Ditto ...	Ditto ...	200	50	150	...	1,500	,,	
Dhand ...	Dard ... / Shakm ...	Sawun 1927 ...	20	5	15	...	285	,,	
Singhour	Rora ...	20th July 1870...	150	4	126	20	540	Infectious.	
Thanessur	Ditto ...	14th August 1870	4	5	4	2	2,040	,,	
TOTAL ...	.....	.....	4,608	1,146	2,216	1,216	30,867	...	

UMBALLA;
DEPUTY COMMR.'S OFFICE,
The 8th November 1870.

J. S. TIGHE,
Deputy Commissioner.

SIMLA.
Major J. Parsons.

From MAJOR J. PARSONS, *Deputy Commissioner, Simla, to the President, Cattle Plague Commission, Lahore,—(No. 950, dated 17th October 1870).*

Forwards herewith a statement of cattle disease which lately prevailed in some hamlets of the Kotkhall Pergunnah of the Simla District, and also in the hamlet of Cutteena in the Hill Rajah of Keonthul's territory. The disease in the Pergunnah of Kotkhall was owing to worms in the hoofs of the cattle, but as there was mortality therefrom, it is included in the statement. The disease, however, in the hamlet of Cutteena was of a very virulent nature, and in a few days destroyed 16 out of the 29 cattle of the hamlet. The 16 all belonged to one man; the disease did not assail the remaining cattle at all. This was probably owing to the unfortunate man's diseased cattle being kept apart from those of his neighbours, which was done by the Rajah's people at my request. Enquiries have been made throughout the district, but no other cases of disease have been reported; further enquiries are being made in the territories of the Hill Chiefs.

Appended statement (abridged),—dated 29th September 1870.

The disease in Pergunnah Kotkhall is called *laroo*—worms in the hoof. It commenced on the 10th of August. In a stock of 400, 150 cattle were attacked and 50 died (12·5 per cent. of stock and 33 per cent. of attacked). The disease was considered very infectious, and said to have been caused by excessive wet weather. The symptoms noted were dulness and lameness, refusal of food and water, rough coat, watering from mouth, and heat of body: duration, 20 or 30 days. The disease in Puteena is called *burra rog*, and broke out on the 7th September. Statistics as given in Major Parson's letter. Considered very infectious; cause not known. Symptoms: refusal of food and water, great dulness, hair standing, watering from mouth, hot body, shivering and looseness of the bowels; duration, 3 or 4 days.

Laroo was treated with success with *chickna* mud and oil, from *keloo* (cedrus deodara), and *burra rog* by separation.

JULLUNDUR DIVISION.

JULLUNDUR.

Dr. H. P. Dickson.

Report by DR. H. P. DICKSON, *Civil Surgeon, on the presence of Eczema Epizootica, or foot and mouth disease, among the Commissariat cattle at Dhurmsala,—dated 9th June* 1870.

In accordance with a request contained in Deputy Commissioner's docket No. 322 of 7th June 1870, I have the honor to submit the following information regarding the presence of foot and mouth disease among the Commissariat cattle at Dhurmsala.

I examined the cattle on the 12th May; there were then ten bullocks affected, one of which had been sent up from Jullundur, and had the disease on its arrival; one of these animals was so reduced in strength that it was thought advisable to have it killed; the others all recovered, and no further cases have occurred.

The animals were kept separate from the herd and their sheds cleaned out; the only recommendation I thought necessary to make was to have the animals fed with some softened food, in order to prevent them from falling away so much in condition. The treatment to which they were subjected was application of camphorated oil to the sores on the mouth and feet, and keeping them standing in a muddy place. To the attention paid by Conductor Smith in keeping the animals affected separate from the herd may be attributed the cessation of the disease.

KANGRA
Lieut.-Col. T. W. Mercer.

From LIEUT.-COLONEL T. W. MERCER, *Deputy Commissioner, Kangra, to the Sanitary Commissioner, Punjab, Lahore,—(No. 584, dated Dhurmsala, 17th August* 1870).

With reference to my letter No. 363, dated 15th June, I regret to report that I have been grossly misinformed by the tehseeldars regarding the non-prevalence of the cattle disease in this district. From information obtained from other sources, I learn that the cattle plague exists to a large extent and is committing much havoc in the district in several parts, and I regret to state that, owing to gross neglect on the part of General Prior's cowherd, the disease has been brought into Dhurmsala. All General Prior's cattle are attacked.

2. I have written to all the planters for information, and hope soon to be able to furnish trustworthy reports.

3. There is such an entire absence of intelligence in the tehseeldars of this district on any subject foreign to their own immediate duty, that their reports are not to be relied on. I should therefore be very glad if any officer appointed by the Cattle Plague Commission could visit the district to ascertain the extent and nature of the disease.

4. I send you a report received from Captain Harcourt, Assistant Commissioner of Kooloo. This is not the worst I have received.

5. I am at present without an Assistant, and so overwhelmed with work that I have little time to give to the subject myself.

KANGRA.
Lieut.-Col. T. W. Mercer.

6. I have asked Dr. Massy, the Civil Surgeon, to instruct his Native Doctors at Dispensaries to ascertain and report on the disease.

7. I beg the favor of your, by an early date, communicating with the President, Cattle Plague Commission, who, I believe, is at present at Lahore.

KOOLOO.
Capt. A. Harcourt.

From CAPTAIN A. HARCOURT, *Assistant Commissioner of Kooloo, to the Deputy Commissioner of Kangra,—(dated Nuggur, 11th August* 1870).

I have the honor to acknowledge receipt of your No. 461, dated 27th ultimo, giving cover to a copy of President of Cattle Plague Commission's No. 112 of 18th idem.

2. I beg herewith to forward the information received by me from the tehseeldars of this sub-division.

3. The murrain that has made its appearance amidst the Kooloo cattle is termed *koorug-moorug* in local parlance. The first sign of the distemper is,—an issue of blood from the feet, which are licked by the animal suffering, the poison being thus conveyed into the system. This illness seems to have the effect of impeding all movement, and causing a distaste, or perhaps an incapacity, for food. In each sore insects appear, and the tongue also seems to suffer, but not from any open wound.

4. The remedies for disease of the tongue are as follows:—A plant, termed the *losur*, is bruised and broken up with other plants termed *taelee* and *sooroo* (from these intoxicating liquors are made), and the mash is applied to the affected parts with considerable success.

5. For the feet, the *losur* plant is bruised and smeared over the wounds, and the fresh and young leaves of the apricot tree subsequently; occasionally, also the *rurpoorie* and *modul* shrubs are brought into requisition, and with beneficial effect. *Deodar* oil is affirmed to be another excellent remedy.

6. I gather that when young cattle are taken ill with this disease, they generally succumb; but that the full-grown beast for the most part recovers. In Kooloo Tehseel 250 cattle, of which one-third were full-grown, are said to have died in the last few months from this malady, and in Plach Tehseel there have been 62 deaths in all.

7. I understand that the distemper is very widespread, and that it is rather on the increase than otherwise. The Seraj people do not seem to know of any remedy, and I have therefore instructed the Tehseeldar of Kooloo to circulate the knowledge of the medicines that have been of use as widely as possible amongst the Kottees in the Plach Tehseel.

JULLUNDUR.
Leslie Saunders, Esq.

Return showing the number of cattle which have died of disease in the Jullundur District during 1869-70.

Serial No.	Year.	Pergunnahs.	Villages.	Description of disease and number of cattle died.					Remarks.
				Mogh, i. e., purging.	Disease of mouth and hoof.	*Chapla, i.e.*, disease of mouth.	Disease of throat.	Total.	
1	Sept. 1869	Nawashuhr.	Salempoor...	...	...	...	8	8	On receipt of Government Circular No. 29, dated 17th August 1869, calling for report on the spread of cattle disease, inquiries were made from all Tehsildars. The Naib Tehsildars of Nawashuhr reported that eight cattle had died in this village by throat-swelling disease. No disease in any other villages. Other Tehsildars of this district reported that there was no disease prevailing at that time.
2	April „	Jullundur...	Doleykee Sundurpoor.	...	...	17	...	17	A petition of Lumburdars, intimating the occurrence of the disease, was received through the Tehsildar; 25 fell sick, 8 recovered, and 17 died.

Return showing the number of cattle which have died in the Jullundur District,—contd.

Serial No.	Year.	Pergunnahs.	Villages.	Description of disease and number of cattle died.					Remarks.
				Mogh, i.e., purging.	Disease of mouth and hoof.	*Chaplu, i.e.*, disease of mouth.	Disease of throat.	Total.	
3	July 1869	Nawashuhr	Shekhoo, Maugara and Niamutpoor.	30	...	...	...	30	Intimation of the disease was received from the diary of the Thanadar Rahun. Enquiries were made from the Tehsildar regarding the measures taken; he replied that the cattle died before he knew of the disease. No more disease afterwards.
4	Feb. 1870	Jullundur ...	Bias Pind ...	7	...	...	...	7	Putwaree reported that there was cattle disease in this village. Jemadar of Tehsil was deputed, who reported that 12 became sick, 7 died, and 5 recovered. Diseased cattle were separated from the healthy ones; no more disease.
5	„ „	Ditto ...	Allawulpoor	...	...	...	...	...	It was reported that disease existed in this village, but no cases were reported.
6	„ „	Nawashuhr	Mayee ditto	1	...	...	...	1	Tehsildars ported on 8th February 1870 that the disease had visited this village. Orders were issued to report the result and take measures for cure; he reported that four were attacked with disease. Medicine supplied from the sudder was given; one died and the rest recovered.
7	„ „	Jullundur ...	Koopur ...	...	...	2	...	2	Deputy Inspector reported the occurrence of the disease. Petition was sent to Tehsildar, who reported that 2 died, 4 recovered, and 2 sick were separated from the healthy.
8	„ „	Ditto ...	Khicheepoor	...	...	2	...	2	Mounted Sergeant, Thana Adumpoor, reported the occurrence of the disease; 2 died, rest recovered.
9	March „	Nakodur ...	Litran ...	...	...	3	...	3	Naib Tehsildar reported the disease. Chuprassie was deputed to take steps for remedy. Report received on 1st March; stated that 3 died. and the remaining 3 recovered by giving medicine.
10	„ „	Nawashuhr	Dosanjh ...	...	.	...	...	...	Putwaree reported the disease to the Tehsildar. Chuprassie was deputed; 3 which fell sick recovered.
11	April „	Jullundur ...	Dohrey ...	8	...	...	...	8	It was found from the diary of Thana Adumpoor that disease was prevailing here. Enquiries were made by the Tehsildar. Chuprassie was deputed to the spot; result known was, that 8 died, rest recovered. Disease remained for two days. Medicines—*goor* and *ajwain*—were given.
12	„ „	Phillour ...	Lisara ...	...	...	45	...	45	Mr. Marshall, in his letter, dated 5th April, reported on the disease in this village. Tehsildar reported that 45 died.

JULLUNDUR.
Leslie Saunders, Esq.

Return showing the number of cattle which have died in the Jullundur District,—concld

Serial No.	Year.	Pergunnahs.	Villages.	Description of disease and number of cattle died.					Remarks
				Mogh, i. e., purging.	Disease of mouth and hoof.	*Chapla, i. e.*, disease of mouth.	Disease of throat.	Total.	
13	April 1870	Jullundur ...	Mundha ...	...	...	2	...	2	Deputy Inspector, Thana Adumpoor, informed of the disease; 2 died, rest all well.
14	May „	Ditto ...	Lesreewala ..	...	...	3	...	3	Mounted Sergeant reported. Jemadar of the Tehsil was sent to the spot; 12 were sick, 3 died, and 9 recovered.
15	„ „	Nakodur ...	Kung Kullan	4	...	...	...	4	Putwaree reported the disease. Tehsildar deputed a Chuprassie to take measures; 11 sick, 4 died, rest recovered.
16	„ „	Jullundur ...	Pindomee Nijran.	...	...	...	...	...	Deputy Inspector reported the occurrence of cattle disease in this village. Tehsil Jemadar was sent to the spot; no deaths occurred.
17	June „	Ditto ...	Khoordpoor	...	...	10	...	10	Deputy Inspector reported the occurrence of cattle disease in this village; 50 became sick, 40 recovered, and 10 died.
18	„ „	Ditto ...	Bhugwanpoor	...	...	...	...	...	Deputy Inspector reported the occurrence of cattle disease in this village. On enquiry it was found that really no disease existed.
19	Augt. „	Ditto ...	Massania ...	...	...	3	...	3	Deputy Inspector reported the occurrence of cattle disease in this village. Tehsil Jemadar was deputed, who reported that 10 fell sick, 3 died, and 7 recovered.
20	„ „	Phillour ...	Chhaola ...	...	...	...	...	...	Tehsildar reported having received intimation of the diseases; some died; no number given by the Tehsildar. Deputy Commissioner inspected the cattle of this village
			Total ...	50	...	87	...	145	
			Nawashuhr	31	...	...	8	39	
			Jullundur ...	15	...	39	...	54	
			Nakodur ...	4	...	3	...	7	
			Phillour ...	...	...	45	...	45	

LESLIE SAUNDERS,
Deputy Commissioner.

UMRITSUR DIVISION.

UMRITSUR.

From MAJOR F. M. BIRCH, *Deputy Commissioner, Umritsur, to the Secretary, Cattle Plague Commission, Calcutta,—(No. 866, dated 30th May* 1870). Major F. M. Birch

Reports that cattle plague has made its appearance in village Chohalla, 12 miles from the Ajnalla Tehseel in this district. Ajnalla is about 16 miles from Umritsur; a Government Serai to put up in is available.

2. The plague is principally amongst buffaloes, but bullocks are also now falling ill with the disease.

3. The symptoms are,—stupor, the cattle refuse fodder for about three or four days, followed by a yellow discharge from the mouth, and then of blood from the intestines, for about three or four days, after which death ensues. The symptoms are different from those previously observed.

From T. H. THORNTON, Esq., *Secretary to Government, Punjab, to the President, Cattle Plague Commission,—(No. 643, dated 1st August* 1870). PUNJAB. T. H. Thornton, Esq.

With reference to the letter of the Deputy Commissioner of Umritsur to your address, No. 866 of the 30th May last, I am desired to inform you that Major Birch now reports that the cattle murrain in the Ajnala Tehseel has ceased.

Cattle disease of an epizootic nature prevailing in the Tehseel Ajnalla, Umritsur District, for the fortnight ending 31st August 1870. UMRITSUR. Major F. M. Birch.

Name of District, Talook, or Mouzah, and Village.	Name of disease in Vernacular or English.	Date of outbreak of disease.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.	REMARKS.
District Umritsur, Pergunnah Ajnalla, Mouzah Kukkar	Moong.	26th July 1870.	70	18	52	...	On the 8th August, when by the last reports the cattle plague was said to have ceased, the members of the Cattle Plague Commission arrived. In accordance with their suggestions, enquiries were immediately made from persons then present at the Sudder and Tehseel, and it was discovered that cattle disease existed in Pergunnah Ajnalla and east and west of the city of Umritsur in Pergunnah Umritsur. The Commission made an investigation in the village of Buddala Bhittanid, and the President *himself* discovered the disease in Mal, which is about three miles from Umritsur. These enquiries left no doubt that the cattle disease was prevalent in a virulent form in several parts of the district.
Mouzah Dikloot ...	Sirka...	28th ditto ...	25	10	15	...	
Mouzah Vera... ...	Do. ...	Ditto ...	15	10	2	3	
Mouzah Bullian ...	Moong.	26th ditto ...	78	61	5	12	

DEPUTY COMMISSIONER'S OFFICE;
UMRITSUR,
The 5th September 1870.

F. M. BIRCH,
Deputy Commissioner.

Village of VADALA, *six miles north-west of Umritsur,—dated 9th August* 1870. VADALA.

GULAB SINGH, aged about 55, states:—

The disease which has attacked the cattle in this village is locally called *mannoon*. *Mannoon.*

The symptoms of the disease are,—loss of appetite and watering from the eyes, offensive breath, sore mouth; on the second or third day violent purging, mixed with mucus and blood. Death follows in five to eight days. Rinderpest. Symptoms.

The sore mouth alluded to begins with blisters like bubbles, and when these break, they get raw, red, and sore. The feet never become affected in this disease. They become affected in another disease from which cattle seldom or never die. This other disease is called *paira*. Animals attacked with *mannoon* seldom recover: perhaps from 5 to 10 per cent. recover. The present attack commenced about four or five weeks ago. About 40 animals *Paira.* Foot & mouth disease.

VADALA.

died in the western *patti* of this village, and about 35 in the eastern. The disease first

Source of the disease.

attacked two bullocks in the western *patti* or division of this village. The bullocks belonged to Heera Singh, and were allowed to herd with the other village cattle. Ten days after they were attacked, and after they had died, the disease broke out among the others. Their carcasses were thrown out by the chamars, and other cattle may have come up and smelt the carcasses.

Dissemination of the disease.

[*N. B.*—The Commission saw the carcasses of about 20 animals, and one buffalo was observed licking the bones, while several others were seen standing in the midst of them.]

Heera Singh, and no other man in the village, had bought cattle for five or six months before the outbreak, and none of the cattle in the villages within one or two *koss* (2 or 4 miles) have been visited with the disease. I cannot say with certainty about villages at a greater distance off, but I have not heard of the disease anywhere near. On 11th April last, a fair was held

Umritsur Fair, 11th, April.

at Umritsur, which lasted for a week. The cattle dealers passed through this village, or on the

Dealers pass through or near the village.

road not above two hundred yards distant. No murrain appeared among the cattle at the fair

Two years ago *mannoon* appeared among cattle at the fair

this year, but two years ago *mannoon* appeared amongst the cattle of the fair, and 18 to 20 affected animals had to be removed. We believe the present attack originated in this village, and was not imported. There is another fair held at Umritsur in November. When grass

Another fair at Umritsur in November.

is scarce in this village, fodder is brought from other villages, but it is not the custom to send

Do not send cattle to other places to graze.

our cattle elsewhere to graze. Cattle are brought chiefly from Goozerat, Hissar, Sirsa,

Where cattle are bought.

Rawulpindee, Ferozepore, Kurnaul, &c. There is never any want of water for the cattle in

Water obtained from wells.

this district, as there are several wells, and the water is considered good. This disease

History.

mannoon has appeared in this village years before, and in my father and grandfather's time, but the mortality was never so great.

Outbreaks of *mannoon*

Another man, aged 60, says, he first saw the disease when he was 10 years old, and again when he was 30, and again 10 years ago. He lost ten cattle himself in one of these outbreaks.

Rinderpest in 1820, 1840, 1860.

We have tried giving cooling medicines and herbs, but few cattle have recovered. As far as I know, the disease may attack the same animal a second time, but I cannot remember any

Cooling medicines given.

instance of this. The domestic servants, called *chooras*, have a right to the skins. They sell them from 12 annas to 3 rupees each to hide merchants in Umritsur. Cattle poisoning is not

Does not remember an instance of a second attack.

known here. The best cattle for ploughing are of Hazara breed. The best milch cows come

Hides taken and sold by *chooras*.

from Nidj, in the Montgomery District.

Cattle poisoning not known.

[*N. B.*—The Commission saw the cattle (they were very weak) grazing by the sides of the highway on the Lahore and Wuzeerabad Road. The rain had fallen only three days previously, and there was hardly any pasture ground or any grass to eat.

Breeds.

Cases.

The villagers showed the Commission seven animals (buffaloes and bullocks) which they considered to be affected with *mannoon*. On carefully inspecting these animals, three buffaloes and one bullock were found affected with rinderpest, and have been ill from three to ten days. The usual symptoms were observed, but no aphthous condition of the mouth; the mucous membrane of both the gums and buccal membrane were in three cases very much congested, and in one slightly so, and this animal was evidently recovering from disease. The breath of the three was offensive. The fæces of all four were offensive. Blood was not found in the fæces, but mucus in abundance was seen. There were no eruptions on the skin. The discharge from eyes, nose, and mouth was very viscid. All were very weak, one very much so, and constantly lying down.

Two other bullocks were seen recovering from disease.

The seventh, a buffalo cow, was said also to be affected with *mannoon*, and had been lying down, unable to rise, for two or three days; was apparently in a dying state, very much emaciated, but showed no signs of rinderpest. This animal appeared to be dying from debility, the result of starvation, and probably cyst disease.

The Veterinary Assistant was left behind until noon to watch this animal, and in the event of her dying to make a *post-mortem* examination; but at 12 o'clock, when he left, she was still alive.

The Commission, on their return from the above village, visited the village Mál, about two miles north-west of Umritsur, on the Gujranwalla Road.

The disease *mannoon* has been prevailing in that village during the last month; many head of cattle have died, and the symptoms of the disease were given as above recorded. One cow died yesterday.]

SEALKOTE.

Major C. V. Jenkins.

From MAJOR C. V. JENKINS, *Deputy Commissioner, Sealkote, to the Commissioner and Superintendent, Umritsur Division,*—(*No.* 334, *dated 9th September* 1870).

In reply to your docket memo. No. 114, dated 16th August, relative to the cattle disease, I have the honor to forward a very able and condensed report transmitted me by Mr. Sub-Assistant Surgeon Futteh Singh, in charge of the Civil Dispensary at this station.

2. This officer has rendered me much valuable assistance in the collecting together of the details of this district with reference to the disease, and has personally visited the chief spots whereat the murrain had shown itself in a more extensive form.

SEALKOTE.
Major C. V. Jenkins.

3. I had much difficulty in getting at anything like an accurate statement of affairs connected with this pestilence, and being limited in my usual number of European Assistants, I was unable to go out and test the matter in person (as I otherwise should have done, had the measure been practicable).

4. From the report herewith sent, and on which I can place every reliance, the part of the district at first affected would appear to have been the Duska Tehseel, or the area of land situated about half-way between this station and Gujranwalla, and on the direct high road to that place. I obtained the best information I could through tehseeldars, &c., the moment the matter was brought to my attention; but as I felt very doubtful as to the general correctness of the reports, which came in a varied form, I deemed it best to delay transmitting any official memorandum on the subject to you until I could test the matter more certainly.

5. From Mr. Futteh Singh's report I draw the following conclusions:—

1*st.*—Between May and June, and up to July (the commencement of the rains), the disease appeared severe and in an epidemic form, but it gradually after that date diminished, and is now only in an endemic form and of a slight nature.

2*nd.*—The tabular statement (carefully tested, corrected, revised, and curtailed to its lowest probable average) shows badly for the months when the disease first appeared, *viz.*, May and June; and I have deemed it advisable to point out to the tehseeldars and other officials in the district that I regret to observe a want of carefulness on their part in not having, at least, ascertained and reported upon a calamity which it is improbable they could have remained ignorant of for so long. It is true, the apathy and indifference of the natives themselves may have been *partially* the cause of the officials in the district remaining (to a certain extent) ignorant of the severe nature the disease had assumed; but still I hold that a little more energy and general activity on their part (and also by personal conversation with the principal lumbardars, &c., which they should frequently and freely resort to) must have exposed an existing evil of such a nature.

The mortality, 2,327, sounds enormous, but I have every reason to believe it did take place. The whole district must have been more or less affected by its ravages, as I observe that, though it first showed itself in the Duska Tehseel, those of Pusroor, Zufferwal, and more especially Reyah, suffered very heavily.

3*rd.*—Mr. Futteh Singh attributes the appearance and spread of the disease to the following causes:—

(1.) Heat,
(2.) Want of green fodder,
(3.) Over-work at the ploughs, and
(4.) Contagion arising from disease.

6. I am inclined to think that the natives are now more inclined (from their recent losses) to take full and remedial measures against a return and spread of the disease, and I have caused several copies of the rules laid down for treatment and prevention of its spread (conveyed in Circular No. 4-362, dated 15th February 1866, from Mr. Thornton, Secretary to Government, Punjab) to be printed off in the jail, and to be thoroughly and widely circulated throughout the different tehseels and villages and in other towns in the district.

7. In conclusion, I would state that the bi-monthly return called for by the Commission must *tend much* to check any further serious visitation of this disease; and in transmitting these remarks on the subject, together with Mr. Futteh Singh's able and careful report, I beg to bring that officer's name before you, as also before the local Government, with a view to the aid he has so voluntarily and efficiently rendered me (at a trying month in the hot weather season) being acknowledged by the said Government and yourself.

From MR. FUTTEH SINGH, *Sub-Assistant Surgeon, Sealkote, to the Officiating Deputy Commissioner, Sealkote,—(dated 29th August* 1870).

Mr. Futteh Sing.

General remarks.

With reference to the cattle disease report, I beg to inform you that the cattle disease commenced in this district in an epidemic form in the month of March 1870. The part of the district first affected was Duska Tehseel, and we believe that the disease was brought here from Gujranwalla District, or at all events that side. At first the epidemic was very mild, but it reached its acme in the months of May and June, and then commenced to decline gradually, so that at present the disease cannot be properly called an epidemic, isolated cases only occurring here and there. The decline of the disease has followed the rainfall.

In a brief report submitted by me a short time ago, I expressed my opinion that the disease never assumed an epidemic form. The data on which my opinion was then based were very few, and even those very imperfect; since that I have received more authenticated information from various parts of the district, and have also made actual observations myself during my last tour of inspection of the branch dispensaries of the district; consequently, I have changed my opinion, as expressed before, and am fully conscious that the disease did really appear in an epidemic form.

SEALKOTE.
Mr. Futteh Singh.

The accompanying tabular statement shows the mortality among the cattle that was caused by the epidemic from the first of March to the end of July 1870.

Diagnosis of the disease.

As to the nature of the disease, I beg to state that the epidemic presented different forms.

The great majority presented the following symptoms:—The animal suddenly appears dull, ceases to take anything or ruminate; there is severe constipation; slight mucous discharge from the nose at first, which becomes fœtid and very adhesive; afterwards flow of saliva from mouth; there is tympanitic swelling of the belly; there is also swelling of the throat, as well as of the legs and feet, followed (in some cases) in the latter instance by ulcerations and maggots.

In this state the animal remains from 24 hours to 6 days, and then dies exhausted. In other cases diarrhœa makes its appearance, or dysentery with bloody evacuations is the principal symptom. This latter form was especially prevalent in Reyah Tehseel.

Native names of the disease.

Mannoon and *mohkur* are native names of the disease.

Causes of the disease.

The causes of the disease are believed to be various; before rainfall the disease was said to be caused partly by there being scanty fodder and the animals being worked very hard. In a single native word, this cause is called *rorah*. Among other causes of the disease, drinking bad water, eating bad grass, heated atmosphere, &c., are also recorded. The disease is also believed to be propagated to a very great extent by contagion.

Class of cattle most affected.

The cattle that suffered most were buffaloes and bullocks.

Duration of disease.

The duration of the disease between its invasion and death or complete recovery was on an average found to be from three to six days.

Treatment.

There were several native modes of treating the cattle affected with the disease in question. Almost all means were employed, but with no great success. Various soothing and astringent medicines were used to stop diarrhœa and dysentery, such as catechu, *keekur* leaves, butter, *mahdee* leaves, &c. The swollen throat and legs were washed with soap and warm water, decoction of poppy heads and alum, *keekur* bark decoction, &c. Cauterization was also used to the swelled throat and legs. To relieve the confined bowels, hot ghee or oil, asafœtida, &c., were employed.

In conclusion I beg to state that the fortnightly reports referred to in your letter will be submitted as they are received.

Abstract showing the prevalence of Cattle Disease in the District of Sealkote during the months of March, April, May, June, and July 1870.

District.	Name of disease.	Date of outbreak of epidemic.	Number of cattle attacked.	Number of cattle which have died.	Number of cattle which have recovered.	Number of cattle still ill.
Sealkote.	*Mannoon* or *Mohkur*.	1st March 1870.	3,516	2,327	934	255

Abridged Tabular Statement showing the number of Cattle attacked and died from disease in the Umritsur, Goordaspore, and Sealkote Districts of the Umritsur Division, Punjab.

Dates of Reports.	Names of districts, with number of tehseels affected.	Number attacked.	Number died.	Remarks.
From 1st September 1870 to 15th December 1870.	UMRITSUR—			The following names are given to the several diseases:—
	3 Tehseels or Pergunnahs ...	218	155	*Vurne gardan* or swelling of the neck. — *Lahir bath.*
	Deaths per cent. of attacked, 71·1.			— *Mannoon.*
				Wah or purging. — *Pail chulna.*
				Bogma. — *Mokhur.*
From 1st September 1870 to 30th November 1870.	GOORDASPORE—			*Mogh.* — Diarrhœa.
	4 Tehseels	4,102	1,107	*Mukh.* — *Dabah* or cough.
	Deaths per cent. of attacked, 26·98.			*Rorah.* — Inflammation of throat.
				Tilli. — Bleeding.
				Zaherbad. — *Akur.*
				Bail. — *Bur.*
From 16th August 1870 to 30th November 1870.	SEALKOTE—			*Khoorock.* — *Pirtusee.*
	4 Tehseels	3,914	3,112	*Galghatoo.* — Scabies.
	Deaths per cent. of attacked, 79·5.			
				From the symptoms recorded, there can be no doubt that the diseases chiefly were rinderpest, pleuro-pneumonia, quarter-ill, foot and mouth disease, and probably diarrhœa (*bhooknee*).—(C. P. C.)
	TOTAL ...	8,254	4,374	

GUJRANWALLA. Lieut.-Colonel H. P. Babbage.

From LIEUTENANT-COLONEL H. P. BABBAGE, *Deputy Commissioner, Gujranwalla, to the Commissioner and Superintendent, Lahore Division,*—(*No.* 335, *dated the* 16*th August* 1869).

In answer to your No. 289-2261 of 28th July 1869, regarding the cattle disease in the bar, I have the honor to state that an examination of the bodies of the dead cattle was made in two different places in the bar by country hakeems. I also had two sick bullocks sent into the Suddur, expecting them to die, but as they did not seem likely to die quickly, and I would not send them to graze for fear of contagion to the cattle here, and feeding them tied up was very expensive, I let them go after a fortnight.

Disease in the bar.

2. I annex a memorandum made by the Civil Surgeon of what he could observe while they were under his observation.

3. The disease is now dying out, but I have, since receipt of your No. 289, sent orders to select, if possible, an animal likely to die, and bring it into Gujranwalla, so as to be examined by the Civil Surgeon.

4. Owing to the fluctuating nature of the bar population, and the unwillingness of the fixed residents of those parts to any enumeration of their cattle, I have not been able to make any reliable estimate, but probably 12 or 15,000 buffaloes and horned cattle and 4 or 5,000 sheep and goats may be considered to have died. Even the ravine deer died in numbers, and were seen lying dead about the bar.

Mortality.

Memorandum by Civil Surgeon.

A full-grown cow, and a calf about two years old, said to be suffering from the cattle plague prevalent amongst the cattle at the bar, were placed under my observation about the 9th ultimo, and remained up to the 22nd. I noted the following appearances the day they arrived:—

Cases examined by the Civil Surgeon.

The dewlap of the calf was swollen for about five inches along its lower or free margin. There was extreme emaciation in both the cow and calf.

They were active in their movements. The eyes were clear, mouth moist; they ate voraciously; the urine seemed normal in quantity and color. The dung was also natural in appearance, consistence, and quantity, and indicated, as far as could be judged, that the process of digestion and assimilation was unimpaired. Beyond the swelling in the dewlap, the voracious appetite and emaciation, no symptom of a seriously-diseased condition could be made out.

During the fortnight they continued under my observation I saw them frequently, and watched their condition with much interest. At the end of this time the swelling had partly subsided, but no other change in their condition took place.

The men from the bar who accompanied these two animals stated that violent diarrhœa was the most prominent and characteristic symptom of the disease, and that this was rapidly followed by emaciation, and that the swelling of the dewlap only occurred in about 30 per cent. of those attacked. The voraciousness increased with the emaciation, and remained until within an hour or two of death.

In the absence of any well-marked symptoms and the examination of a dead body, it is scarcely possible, in my opinion, to arrive at any definite conclusion as to the exact nature of the disease.

P. S.—The zemindars stated further that the time the disease lasted, *i. e.*, between seizure and death, varied much, sometimes it was four or five days, at other times as long as two or three weeks, but that up to that date, the 9th ultimo, there had been no recoveries.

The two animals while under observation were well fed, but no attempt at any treatment was made.

LAHORE.

LAHORE DIVISION.

T. H. Thornton, Esq.

From T. H. THORNTON, Esq., D. C. L., *Secy. to the Govt. of Punjab, to the Secy. to the Govt. of India, Home Dept.,*—(*No.* 3333, *dated 9th November* 1869).

In continuation of this office No. 2802, dated 15th September 1869, I am desired to forward copy of a further report, dated 14th October, by Dr. Quinnell, Civil Surgeon, on the cattle murrain in the bar of the Gujranwalla District.

GUJRANWALLA. Dr. R. Quinnell.

From Dr. R. QUINNELL, M. D., *in Medical Charge, Gujranwalla, to the Officiating Deputy Commissioner Gujranwalla,*—(*dated* 14*th October* 1869).

I have the honor, in continuation of my memorandum of the 14th August, to submit the following particulars with reference to the cattle disease which has been prevalent in the bar of this district since September 1868.

The cow and the calf described in that memorandum having subsequently recovered, were allowed to be taken away by their owner, and they were replaced on the 20th August by two fresh full-grown cows, selected as having the disease in its severest form, and believed to be quite past recovery. GUJRANWALLA. Dr. R. Quinnell.

The symptoms presented by these two animals, although different in some respects to what had been noted in the two previous, indicated nothing more, in my opinion, than what would be apparent in the same disease in a more advanced stage. Symptoms.

The movements of the animals in this condition were now no longer active; the limbs were weak, joints swollen, and gait staggering; the eyes were dull and heavy, the mouth dry, and the tongue and nostrils also; while the nose, ears, and all other parts of the body were cool and of uniform temperature.

If left to themselves, they grazed about freely, but refused everything in the shape of cut fodder, dry or green. The cattle in the bar are, however, not accustomed to cut fodder. But the appetite, I remarked, was much less keen than in the previous two, which fact, together with the total absence of any swelling in the dewlap, impressed me with the belief that neither the "voracious appetite to the last," as described by the zemindars, nor the swelling in the dewlap could be put down as a characteristic symptom of the disease, and that their statements on this head, alluded to in my previous memorandum, are incorrect.

The emaciation was extreme, and had reached such a degree, indeed, that the outline of almost every bone in the body could be clearly made out. The skin over the prominences of the bones was completely denuded of hair, looked blackened and glistening, and felt adherent to the bones.

As morbid changes in the urine sometimes indicate very clearly certain kinds of disease, the urine was compared with that from a healthy cow, and in neither quantity, color, nor density was any noteworthy difference observed, nor subsequently could any abnormal elements be detected by tests. The dung was fluid and offensive.

But little change was perceptible in their condition from the date they came under observation to that of their death. One died on the 24th August, four days after arrival, and the other on the 13th September, twenty-three days after arrival.

The body of each was opened and examined a few hours after death, and the morbid changes which had taken place internally, with one exception, which will be described further on, were found to be exactly similar, so that the description of one will be for both. *Post-mortem* pearences.

The abdomen was examined first on laying it open; the entire surface of the viscera presented a very strange greasy appearance, as if coated thickly with oil, and the same impression was conveyed to the touch when handled. On the other hand, the total absence of fat, even in the parts where it is found most abundant in health, was also remarkable.

The liver was small in size, black in color, and its substance so much softened that it could be reduced to fluid by the slightest pressure. The gall bladder was almost empty, and its contents (about the third of an ounce) dark, viscid, and granular. The stomachs were tensely impacted with the grass eaten in different stages of digestion, and their coats thinned and pale. The spleen looked atrophied and bloodless.

The intestines were much distended with gas, and their coats thinned and pallid, with here and there small circular, dark-colored patches of sub-acute inflammation along the mucous surface. The kidneys were natural in size, but pale and flabby. The bladder contained about four ounces of urine, looked shrunk, but was otherwise normal.

The chest was next examined. The heart was large; the walls thinned and the muscles wasted and blanched. The cavities, which were distended, contained a few shreds of fibrin adhering to the muscular fasciculi. The vessels appeared enlarged and prominent. The lungs were natural in color, highly elastic, and healthy. A cluster of hydatid cysts, about twelve in number, the size of hazelnuts, was found adhering to the base of the left lung of the first animal, and constituted the only difference in the morbid changes apparent in the two.

Both the gullet and the windpipe were also examined and found free from any appearance of disease.

As there was no symptom which pointed to the brain being involved, the head was not dissected.

Neither in the stomach, intestines, nor elsewhere did I find any trace of the presence of worms or acari of any kind.

It will be seen from the foregoing that the morbid changes and definite characteristics which mark specific disease are wanting, and that the usual effects of mal-assimilation and mal-nutrition are strikingly manifest in the general anœmic and wasted condition of the organs and muscles of the body.

The zemindars believe the disease to be something new. It has been raging in the bar over twelve months, and although it has much abated during the past few weeks, they believe the change is temporary, and that it will break out with its usual virulence when the hot and

GUJRANWALLA. Dr. R. Quinnell.

dry season comes round again. The total loss from this disease up to the present time is roughly estimated at 10,000 horned cattle, besides sheep and goats.

Causes.

Although suspected more than once to have its origin in bad water, the cattle always drinking from ponds or jheels, which after the heaviest showers must soon become and remain foul and putrid for months, no fresh water from canal or wells being at any time obtainable, it has not been observed if the disease has varied in severity during the wet and dry seasons.

The disease, since its first appearance, has confined itself to the bar and its immediate neighbourhood, which fact, with the foregoing evidence, seems to me sufficiently to prove, 1*st*, that the disease is not contagious; 2*nd*, that it is due entirely to local influences; and, 3*rd*, that investigation into what these influences really are can be best conducted on the spot.

Major W. G. Davies. *From* MAJOR W. G. DAVIES, *Offg. Commr. and Supdt., Lahore Division, to the Secy. to Financial Commr., Punjab,*—(*No.* $\frac{93}{1210}$, *dated* 11*th May* 1870).

Murrain has died out.

In reply to your No. 1481, dated 16th March, and No. 2532, dated 29th ultimo, I have the honor to forward copy of a No. 140, dated 5th instant, from the Deputy Commissioner of Gujranwalla, reporting on the cattle murrain in that district, which, it is satisfactory to learn, has died out.

2. I have to add that, from inquiries from independent sources made by me, I am inclined to concur with the Deputy Commissioner that very heavy loss was sustained by the rukh contractors, owing to the reduction in number of cattle by deaths from the severe epidemic which prevailed last year.

3. Dr. Quinnell's report referred to by the Deputy Commissioner was forwarded with my predecessor's No. $\frac{350}{351}$, dated 25th October last.

T. H Thornton, Esq. *From* T. H. THORNTON, Esq., *Secy. to Govt., Punjab and its Dependencies, to the Secy. to Govt. of India, Home Dept.,*—(No. 246, *dated* 23*rd March* 1870).

Re appearance of murrain.

With reference to the correspondence ending with Home Department letter No. 4977 of 29th October 1869, I am desired to state that a report has been received of the re-appearance of the murrain among the cattle in the bar of the Gujranwalla District, where several fatal cases are said to have already occurred. It is also stated to be severe in the Jhung District.

Lieut. Colonel H. P. Babbage. *From* LIEUT.-COL. H. P. BABBAGE, *Deputy Commr., Gujranwalla, to the President, Cattle Plague Commission, Lahore,*—(*No.* 285, *dated* 20*th May* 1870).

I have the honor, in reply to your No. 289 of 16th May 1870, regarding the cattle plague, to state that no plague is now prevailing in this district.

Murrain in 1869.

2. About 16 months ago a very destructive cattle murrain prevailed among the graziers' herds in the bar or jungle-land in the south of this district, and without doubt many thousand head of cattle were carried off by it, even deer were not infrequently seen lying dead; and it was said by the graziers and zemindars that an animal once attacked never recovered, though it might linger for, perhaps, months.

3. All the information collected on the subject will be found in the office of the Commissioner, Lahore Division, at Lahore, and of the Financial Commissioner at Lahore.

4. It may be said to have prevailed in the country south and west of a line drawn through Hafizabad and Shekhoopoora, and it prevailed all through the south of the district and into the Jhung and Montgomery Districts, but how far I am unable to say.

5. I am quite unable to specify the nature of the disease; the result of a *post-mortem* examination made by the Civil Surgeon I duly reported, and it will be found as above stated. Shekhoopoora lies 20 miles west of Lahore, on the great Derajat Road.

FEROZEPORE. G. Knox, Esq. *From* G. KNOX, Esq., *Offg. Deputy Commr., Ferozepore, to the Offg. Commr. and Supdt., Lahore Division,*—(*No.* 147, *dated* 21*st May* 1870).

I have the honor to inform you that from three pergunnahs of this district tehseeldars have reported that cattle disease has appeared. I have in consequence issued instructions, according to Circular No. 2 of 1858; by all accounts many deaths have not yet occurred.

2. I will report hereafter on the results of the examinations of carcasses by the Civil Surgeon.

From MAJOR W. G. DAVIES, *Officiating Commissioner and Superintendent, Lahore Division, to the President, Cattle Plague Commission,—(No. 2284, dated 25th August* 1870). Major W. G. Davies.

In reply to your No. 329, dated 31st May last, I have the honor to forward in original the answers received from Ferozepore to the questions sent down by you, with reference to the cattle disease which appeared in the Ferozepore District.

Cattle disease of an epizootic nature prevailing in the Ferozepore District, dated 30th June 1870. FEROZEPORE.

Dr. H. F. Williams.

Question.—Name of district, talook or mouzah, and village? *Answer.*—103 villages in Ferozepore Talooka, 133 villages in Leerah Talooka, 118 villages in Mogah Talooka, 35 villages in Mokutsur Talooka, total 389 villages.

Question.—Name of disease in Vernacular or English? *Answer.*—There is no particular name that I know of, but it goes under the general term *murree.* Name.

Question.—Date of outbreak of disease? *Answer.*—1st May 1870.

Question.—Number of cattle attacked? *Answer.*—14,485,—11 per cent. of stock. Statistics.

Question.—Number of cattle which have died? *Answer.*—4,664,—3-6 per cent. of stock and 32 of attacked.

Question.—Number of cattle which have recovered? *Answer.*—9,649.

Question.—Number of cattle still ill? *Answer.*—172.

Question.—Number of cattle belonging to the villages? *Answer.*—1,26,975.

Question.—Whether the disease is supposed to be infectious or not? *Answer.*—Yes. Infectiousness.

Question.—How supposed to have originated? *Answer.*—Unknown. Origin.

Question.—Symptoms of the disease, informing on the following points:— Symptoms.

Appearance of the coat? *Answer.*—Staring, rough, and dirty looking.

Whether there are any eruptions on the body or feet, or not? *Answer.*—At first there is no foot affection, but after a week œdema appears; no eruption on the body.

Eyes and mouth watering or not? *Answer.*—Yes, both.

Body cold or hot? *Answer.*—Hot and feverish.

Cough or labored breathing? *Answer.*—Breathing labored.

Shivering fit or not? *Answer.*—In two cases under observation of, and belonging to, the Sub-Assistant Surgeon none was observed.

Swelling of the throat or any difficulty in breathing? *Answer.*—None. Breathing difficult.

Appearance of urinary or fæcal evacuations? *Answer.*—Urine pale, and apparently increased in quantity; fæcal evacuations semi-fluid and darker than natural; no slime or blood.

Question.—Average duration of attack before recovery or death? *Answer.*—About a week. Duration.

Question.—As to whether any preventive or remedial measures have been used or not, and with any success or not? *Answer*—None. Treatment.

The disease appears to be subject to relapse. The animal refuses food altogether, loses flesh, cannot walk, takes liquids sparingly, and finally dies, apparently of exhaustion. The *post-mortem* appearances show small ulcers of the mucous membrane of the mouth and tongue, with softening. The mucous membrane of the alimentary canal generally is softened and peels off when lightly handled. In some cases there were deep ulcerations, about the size of French beans, in the cœcum and colon. The rectum appeared redder than usual, but no ulcerations were detected. From the quantity of undigested food found in most cases, it would appear that the attack was sudden. The gall bladder was always distended, but the liver was not found diseased, only somewhat paler than natural. In some cases there was effusion in the pericardium and peritoneum. The lungs were somewhat congested at the lower lobes, probably from position, but no appearance of pleuro-pneumonia was found. Kidneys generally normal; congestion of one kidney existed in one of the cases examined. Bladder usually distended. Post-mortem appearances.

From MAJOR W. G. DAVIES, *Officiating Commissioner and Superintendent, Lahore Division, to the President, Cattle Plague Commission,—(No. 2600, dated 28th September* 1870). GUJRANWALLA. Major W. G. Davies.

Forwards for information copy of a No. 355, dated 22nd instant, from Deputy Commissioner, Gujranwalla, reporting the appearance of a murrain among cattle in the Kamokee Pergunnah of that district. The Deputy Commissioner will be requested to report further when the disease is assuming an epidemic form. Murrain in Kamokee.

GUJRANWALLA.

Lieut. Colonel H. P. Babbage.

From LIEUTENANT-COLONEL H. P. BABBAGE, *Deputy Commissioner of Gujranwalla, to the Offg. Commissioner and Superintendent, Lahore Division,*—(*No.* 355, *dated 22nd September* 1870).

Bhuknee in Kamokee.

I have the honor to report for your information that a sort of murrain has broken out in the Kamokee Pergunnah, and that about one hundred head of cattle are reported to have died within twenty-four days in two villages named Ghogah and Oode, a few miles on either side of the Gujranwalla and Shekhoopoora road. No doubt it will be more or less prevalent in other adjacent villages. The disease does not appear to be the murrain known as *bhuknee*, but is probably pleuro-pneumonia, mentioned by the Cattle Plague Commission.

Major W. G. Davies.

From MAJOR W. G. DAVIES, *Officiating Commissioner and Superintendent, Lahore Division, to the President, Cattle Plague Commission,*—(*No.* 3042, *dated 12th November* 1870).

In continuation of No. 2600, dated 28th September last, forwards, for information, copy of a No. 401, dated 7th instant, from the Deputy Commissioner, Gujranwalla, furnishing further information regarding the disease known as *bhuknee* prevalent among cattle in the bar, and the Kamokie and Nowshera Pergunnahs of that district.

Lieut.-Colonel H. P. Babbage.

From LIEUT.-COLONEL H. P. BABBAGE, *Deputy Commissioner, Gujranwalla, to the Officiating Commissioner and Superintendent, Lahore Division,*—(*No.* 401, *dated 7th November* 1870).

In answer to your No. $\frac{3100}{2601}$ of 28th September 1870, regarding cattle murrain, I have the honor to report that the disease *bhuknee* seems to be spreading from the bar upwards in the Nowshera Pergunnah, and to have reached the Kamokie Pergunnah, some cattle having died in villages east of the Grand Trunk Road. It seems not to have reached the other pergunnahs at all, and to be confined to the part bordering the Bagh Butcha and Deg stream along the Lahore District boundary; but the mortality is not usually reported severe.

2. In Hafizabad and the bar *bhuknee* is not very prevalent, but pleuro-pneumonia, a disease of the lungs in some shape, is still causing loss.

3. I have had the remedial measures and medicines suggested to me by the Cattle Plague Commission translated and lithographed, and circulated freely all over the district.

From LIEUT.-COLONEL H. P. BABBAGE, *Deputy Commissioner, Gujranwalla, to the Officiating Commissioner and Superintendent, Lahore Division,*—(*No.* 449, *dated 12th December* 1870).

Reports that in the vicinity of the town of Akalgurh, the disease known as *bhuknee* has appeared among the cattle; in the bar it has considerably abated.

LAHORE.

Evidence taken at Lahore, dated 10th August 1870.

Cysts in meat.

Where found.

Different kinds described.

Carcasses containing cysts condemned.

In one day in December 1868, 25 carcasses were burnt.

The lungs are sometimes found heavy.

OWEN JACKSON, Butcher Sergeant at Meean Meer Cantonment, has been so employed for 2½ years. His trade was that of a butcher before entering the Army. He has observed cysts in the liver, heart, shoulders and rounds of beef. The cysts generally vary in the muscle from the size of a small pea to that of a sparrow's egg. In the liver and lights we find large water bladders. These vary from the size of an egg to the size of a large orange, and sometimes contain yellow matter, either thick or thin. The medical officer told me to condemn all carcasses containing water bladders in any parts of the entrails, or cysts in the meat. In the month of December 1868 no less than 25 carcasses were burnt in one day on account of containing cysts. Sometimes the lungs are found heavy; I should say that about 6 per cent. are heavy. They are generally found in thin animals; sometimes these lungs contain a yellowish or greenish buttery kind of stuff.

Maggots in sheep's heads.

Since the end of 1869 the Commissariat Department have issued meat irrespective of its being cyst-infected or not.

In sheep's heads maggots are almost invariably found at the upper part of the nostrils. They resemble the maggots found under the skin on the backs of cattle. Formerly the order was to burn all cyst-infected carcasses; but now, since about the end of last year, the Commissariat Department issue all meat, irrespective of its being cyst-infected or not. In the latter end of June and throughout July three cows and two calves died, showing the following symptoms:—running from the eyes and nose, furred tongue, sore and greasy-looking mouth, lying down, off food and water, purging set in the third day, and with the purging blood passed; breath and purging very offensive. In all the cows the hair stood straight up.

Cattle died from diseases.

Symptoms.

One animal died in two or three hours before purging set in, and the other four died, each of them, in four or five days. The cow which was first attacked had been brought in from the grazing ground about four or five days before.

The grazing ground is about 11 miles off Meean Meer, at a place called Ruckchahall. I often visited the grazing ground (about two or three times a month), but I met with no disease among the grazing cattle. There is no road near the Ruckchahall. LAHORE.

KHODA BUX, Chowdry of the Goallahs, states that there is no *mannoon* (rinderpest) at present among the cattle of the city of Lahore; but six months ago it did prevail, and about 80 to 90 cattle died from it. *Mannoon* not at present prevailing. Prevailed six months ago.

The symptoms of *mannoon* are:—loss of appetite and spirits; discharge from eyes, nose, and mouth; sore mouth and offensive breath; purging, with white flakes of mucus (but he did not observe blood); dung very stinking. Animals generally die in from 5, 6, and 15 days to a month. Symptoms.

Eruptions sometimes are seen on the skin, on the sides of the legs, and on the udder. The disease was well known to our forefathers. Sometimes *mannoon* appears in a mild form, and sometimes severe. Sometimes mild, sometimes severe.

It does not appear every year, but comes among cattle occasionally every third or fourth year. I have myself seen eight or nine outbreaks. I am 35 years old. Sixteen to 18 out of 20 die when the disease is of a malignant type; when it is mild 1 or 2 out of 20 die. When the animal is affected with *mannoon* I do not mix water with the *bhoosee*. I give always water mixed with *bhoosee* to my healthy cattle, and I give as medicine *ghee*, 6 or 8 chittacks, also 3 or 4 seers of curd to cool them after they recover. We do not give anything when they are actually ill, because we find medicine has no effect. Some people give *arrack*, but I do not think it does much good. I have often seen that the cattle get the disease a second time, and the second attack may be severe or mild. I have found that old and full-grown cattle die more from the disease than the calves. I find too that cows die more frequently than buffaloes, but I keep more cows than buffaloes. It generally breaks out in the city of Lahore in February or March, and lasts for two months. I went to a marriage in last May to the village of Durrawaga, about 20 miles from this, and 3 or 4 miles to the right of the Gujranwalla road, and the cattle were there affected with *mannoon*. Occurs every third or fourth year. Between 1840 and 1870, eight or nine outbreaks of *mannoon* occurred. Mortality. Treatment. Cattle may have *mannoon* a second time. Old cattle die more from *mannoon* than calves. Season. Duration. *Mannoon* prevailed in May last in a village 20 miles off.

I believe the disease to be contagious, but we do not separate the sick from the healthy. I have 35 cows and buffaloes. I keep them for milk purposes. Last year 2 of my cattle were affected with *mannoon;* both recovered. Considered contagious. Segregation not practised.

About nine years ago I lost 11 from *mannoon;* I had then 35 cattle. The *chooras* take away the hides of the dead cattle. I know not what they do with the skins. We consider the disease more dangerous when there is no eruption on the skin, and in those cases the purging is most severe and offensive. *Mannoon* prevailed in Lahore in 1869. Also about 1861. Hides. Disease more dangerous when there is no eruption.

1*st September* 1870.

KHODA BUX, Chowdry of the cattle of Lahore, says there is no disease among the cattle in and about Lahore just now; he has during the last twelve days made searching inquiries and found none. No disease prevailing among cattle in or near Lahore.

Peer attacked the cattle in and about Lahore in April last, when many died; only 2 or 3 out of 20 attacked lived. The disease was very severe. The usual symptoms of *peer* are described by the deponent, and he especially noted the eruptions on the udder and sides of the body, and "that when the eruptions come out well outside, the animal generally lived; but if the eruptions break out internally, the animal generally dies." Those that lived in last April attack had good external eruptions, and those that died had the breaking out inside and passed blood, and those that had the external eruptions did not pass blood. He also states that cattle are liable to a second attack. *Peer* prevailed last April. Statistics. Symptoms of *peer*. External eruption. Internal eruption.

Suth is when an animal gets choked from some internal swelling. *Suth.*

Bhooknee is a disease of purging, and sometimes blood is passed; still the animal continues to eat; but in *peer* it does not eat. In *peer* the mouth gets sore and rotten; in *bhooknee* the mouth does not get sore or rotten. In both the breath is offensive, but in *peer* is more offensive. *Bhooknee.* Symptoms of *bhooknee* and *peer* contrasted.

In foot and mouth disease the mouth gets sore, but the cattle do not purge, and they very seldom die from it. He never saw the disease pleuro-pneumonia, but he has seen cattle suffering from cough and getting thinner every day. Foot and mouth disease. Pleuro-pneumonia.

I never send my cattle to graze. I stall-feed them. I get my cattle from Goozenera and other surrounding villages, and from dealers who bring cattle for sale. My cows are served by bulls kept in Lahore; they are of this country breed. No foreign bulls are ever imported from other parts of the country. A cow that cost Rs. 20 ten years ago, now costs Rs. 30 or 35. I do not know the cause of this increase in price; there are no fewer cattle now than there used to be. Does not send cattle to graze. Buys cattle from neighbouring villages. Cows served by bulls kept in Lahore,—all of country breed. Bulls not imported. Value of stock.

KOKA.

Village Koka, 15th August 1870.

Andar-ka-matah—rinderpest.

Symptoms.

The symptoms of *andar-ka-matah* (rinderpest), as detailed by the Lumbardar of Koka, are as follows:—discharge from mouth and eyes; mouth sore and rotten; purging after the fourth or fifth day; passing blood (*per anum*); it is called here internal small-pox (*andar-ka-matah*), because the inside of the animal in this disease is in the same state as the outside of the body of a man affected with small-pox; the animal generally dies; but even if it recovers, it is liable to intermittent diarrhœa for several months, after which it usually dies; but even if it gets well, it is so weak that it is hardly ever fit for anything afterwards.

Foot and mouth disease.

Foot and mouth disease is quite different, and animals never die from it.

The village of Koka is on the borders of the Hafizabad Tehseel, which was devastated last year by the disease locally termed *bhooknee*, or excessive purging, and it is possible that the witness may have in the above description given some of the symptoms of *bhooknee* in addition to those of *andar-ka-matah* (rinderpest).

SHEKHOOPOORA.

Village Shekhoopoora, 13th August 1870.

Many sick and healthy cattle have been collected by the Naib Tehsildar for examination by the Commission. Most of them are simply in very low condition from scarcity of pasturage, but two are found to be recovering from rinderpest, called here *rah* and *bhooknee*.

The excoriations on the gums and buccal membrane are only partly healed, one or two are cicatrizing, and on one animal the eruptions are well marked, consisting of small points of desquamation of the cuticle; both animals are still slightly purged and the dung is offensive. Two buffaloes also are suffering from rinderpest in an advanced stage. The one, a large buffalo cow, is literally bone and skin and very weak, has great difficulty in breathing. The nostrils are distended and retracted to the utmost extent at every inspiration. Percussion and auscultation denote extensive hepatization of both lungs, more especially the left. The breath is very offensive and the poor beast is purging; more or less mucus is voided. Purging is offensive. This case is evidently a well marked case of pleuro—pneumonia; it is proposed to purchase this animal in order to hold the examination of the body.

N. B.—This animal was purchased, destroyed, and examined on the 16th August.

14th August 1870.

Case.

Examined a two-year-old heifer. Owner states that the heifer has been ill 15 days; purging commenced 14 days ago, and is intermittent.

Symptoms.

Present symptoms:—thick discharge from eyes and nose, mouth very hot, fever, excoriation of the gums, purging, respiration quickened, pulse 60. Owner states that the heifer is feeding well; she looks weak and distressed, and there is much œdema all round the eyes.

Case.

Case of pleuro-pneumonia. Owner states that the animal began to breathe hard a month ago, and got very weak.

Soil.

ATTUR, a zemindar, states that the district is flat and the soil consists of three different kinds:—

1. Loam, black-earth, or cotton soil.
2. Intermediate, with here and there pits of kunkur.
3. Waste land, sandy, with kunkur.

Number of cattle. Breed. Present value.

In Shekhoopoora there are about 200 buffaloes, 800 cows and bullocks, and about 1,000 sheep and goats. The cattle are of the native stock of the Gujranwalla "bar" breed. Female buffaloes come from the direction of Delhi. The price of a good working bullock now is Rs. 40; a good buffalo Rs. 50 to 60; a good cow Rs. 30; a good sheep Rs. 3.

Value ten years ago. Uses of stock. Housing. Feeding.

The price of cattle now is double what it was ten years ago, while the price of a sheep has been trebled; other things have risen in the same proportion. Cattle are used for ploughing, draught, and dairy purposes. The proportion kept for dairy purposes is about 5 to 1 of those kept for ploughing and draught. In the cold weather and rains cows are housed in thatched sheds at night, and tied outside in hot weather; during the day they are out grazing.

Kinds of grasses.

There are five kinds of grass, named,—1, *khabar*, 2, *khamun*, 3, *chemur*, 4, *munik*, 5, *gurh*; of these, *chemur* is the common sort which grows everywhere.

Water.

Water is obtained from marshes, tanks, and wells in the last resort. Buffaloes are left out day and night in the jungle during the months of Srabun (July), Bhadro (August), Asin (September). In times of scarcity and famine, cattle are driven from this district towards the banks of the Ravee and Chenab and the Jummoo Terai, about 90 miles off.

Cattle sometimes sent to the banks of rivers to pasture.

Annual fair in April at Aminabad. Umritsur fairs.

There is one cattle fair held in this district at Aminabad, and this fair is held once a year in the beginning of Baisakh (April). Thousands of cattle are purchased at the Umritsur fairs, and those which are not sold there are brought on by their owners and sold privately in

this district. Dealers come to this district from Delhi and purchase large numbers of small cows and bullocks, but not buffaloes. Hides are exported from this district to Lahore. The Lahore dealers purchase the hides in large quantities and have them sent on to Lahore, but I don't know what becomes of them then. The number of dealers in hides has increased; ordinary hides now fetch Rs. 2 each, while ten years ago they used to be sold for Re. 1 only. It is not the custom in this district for hide dealers to give advances. They come once a year in Kartic (October) and make their purchases.

SHEKHOOPOORA. Dealers come to buy in this district. Hides exported to Lahore. Number of hide dealers has increased. Price of hides increased.

I cannot say how many cattle die from ordinary diseases, but about 50 per cent. in this neighbourhood died last year of the plague called *bhooknee* in this country. This *bhooknee* began the year before last, but the chief mortality occurred last year. This plague does not exist this year, except in a very few isolated cases. None of the country people had ever heard of or seen this disease before two years ago. It had never existed before.

Mortality from plague. *Bhooknee* began the year before last. The chief mortality from it occurred last year. Only exists this year in a few isolated spots. Had been heard of before two years ago.

This plague began in the district of Sarwal and extended into Jhung as well as this district.

The disease broke out in the hot weather, but the chief mortality occurred in the cold weather.

Began in Sarwal District in the hot weather, but the chief mortality occurred in the cold weather.

Pleuro-pneumonia, locally known as *daba*, has occasioned some loss in the district, but this is no new disease and does not attack very many cattle. It occurs occasionally. Last year grass was so scarce that many animals died of starvation, but the year before last there was plenty of grass. Last year the mortality amounted to about 600 out of about 1,400, and the largest number of these died from *bhooknee*, but some also from starvation and pleuro-pneumonia. Cattle are liable to be attacked with *bhooknee* without distinction as to breed, age, sex, or condition.

Daba (pleuro-pneumonia) is not a new disease. Occurs occasionally. Animals died from starvation last year. 600 out of 1,400 died—the majority from *bhooknee*. *Bhooknee* attacks all kinds of cattle.

The symptoms of *bhooknee* are:—dulness and feverishness; water falling from eyes, nose, and mouth; mouth is full of sores, and tongue and throat swell; loss of appetite; purging, accompanied in the more severe cases with blood and mucus. Cattle die in from 10 days to a month after showing the first symptoms of the disease. In some cases eruptions come out over the bodies of animals attacked.

Symptoms.

In the last stage there is difficulty in breathing. As soon as an animal is attacked its milk dries up. Until they become too weak, animals prefer to stand. The people do not know that the disease is contagious, and consequently the sick cattle are not separated from the healthy. Ghee, barley water, and butter and *mendi* are given as remedies, but they are of no avail. No sanitary measures have been adopted, and the sweepers eat the carcasses of beasts which have died of the disease, while the chamars take their skins.

Duration of attack. Suppression of milk. Segregation not practised. Remedies. Sanitary measures. Sheep and goats also attacked.

Sheep and goats are also attacked with the disease, and great numbers have died. Men are not affected with this disease. This disease diminishes after the rains, and breaks out in the hot weather.

Man not affected. Effects of weather.

[This witness, as well as others living in this locality, mixed up the symptoms of *bhooknee* (or excessive purging) with those of *matak* or rinderpest.]

15th August 1870.

A cow, 6 years old, showing a cicatrizing sore on the gums and buccal membrane, and œdema around eyes, with slight discharge from eyes; in low condition and still purging. Is recovering, has been sick about a month.

Case 1.

A cow, 10 years old, showing the same symptoms, has been sick more than a month, and has cicatrizing sores on the gums. Both these cases are evidently recovering from rinderpest. Ten others were brought in a very low condition, with more or less purging from new grass, and evidently suffered from starvation.

Case 2.

16th August 1870.

ASAYEST, cow-doctor, about 80 years of age, states that his father was also a cow-doctor; is an inhabitant of the village of Sham, 5 miles off. He has seen cases of *pheepree* since his childhood, and his father used to treat animals affected with the disease. It arises from heat, and consists in a deposit of matter in the lungs. An animal generally takes five or six months to die, or even sometimes as long as a year; but sometimes in severe and rapid cases an animal may die within two months.

Pheepree (pleuro-pneumonia) known in 1800. Nature. Duration of attack.

In cases of purging—*bhooknee*—I have seen blood passed, the mouth is hot, the breath is offensive; many cattle die from this disease.

Bhooknee.

In the disease called *khor* the feet and mouth get sore, but cattle do not die from this disease.

Khor.

SHEKHOOPOORA.

Matah.

In internal *matah* they live or die in 10 or 12 days. They have sore mouths and pass blood with their purging, but do not have sore feet.

Diarrhœa.

Matah about 1805.

Sometimes animals when they over-exert themselves in draught purge, and this purging may last for six months, but blood never passes with this purging. I saw cases of *internal matah* before my beard commenced to grow.

Bhooknee only known the last two years.

Symptoms of *matah* and *bhooknee* contrasted.

The disease called *bhooknee* I have only known these last two years. In *bhooknee* the animal drinks and eats as usual. In *matah* there is loss of appetite. Cattle affected with *matah*, if exposed to rain, do not die. They don't invariably die from *matah*, but they invariably die from *bhooknee*, and in *bhooknee* they don't pass blood.

[*N. B.*—The cases of rinderpest seen by the Commission at the place are called by the natives *internal matah* by some, and *bhooknee* by others.

LAHORE.

Lahore, 19th August 1870, 6 A. M.

Inspection of meat market.

Livers and lungs found affected with cysts.

Beef said to be usually found so affected.

Mutton not affected to the same extent.

Goats not affected.

Inspected the carcasses and entrails of cattle, sheep, and goats slaughtered this morning in the city slaughter-houses. The Inspector of Markets and Nuisances, Mr. Scriven, waited upon and accompanied the Commission. Of thirteen carcasses of cattle, the liver and lungs of eleven were found extensively affected with cysts (hydatid).

The cysts were found in the several stages of existence—watery, creamy, hard and gritty. The Inspector stated that he usually found these organs in this state. The carcasses of mutton were not found diseased to the same extent, either as regards number or amount of disease, but cysts were found in some of the sheep. The goats appeared to be comparatively free from disease.

No cysts observed in the meat.

The Commission saw three head of cattle killed and opened (these are 3 of the 13 above noted), and in each there were extensive cysts. No cyst was observed in the meat, but it was in the carcass, so the Commission had not a good opportunity of finding cysts in its substance.

A cow, for slaughter, affected with pleuro-pneumonia.

The Commission observed that one cow, to be killed to-morrow morning, showed symptoms of pleuro-pneumonia, and the left lung was evidently more or less hepatized. The Inspector was requested to have this cow killed in his presence to-morrow, and then take the opportunity of examining the left side of the chest.

20th August 1870.

Post-mortem appearances of the lung of the cow.

Livers and lungs of two cattle killed this morning.

Diseased.

The Inspector of Markets reports that the near lung of the white cow above alluded to was found, on opening the body this morning, to be "heavy" and sticking to the ribs. The liver and lungs of two other cattle killed this morning in the slaughter-house were brought by the Inspector for the inspection of the Commission, as being "very full of cysts and quite corrupted." The Commission found these organs all but disorganised from holding innumerable cysts in every stage of existence. In a portion of one of the livers several cysts have burst and run into each other, and thus formed an immense abscess, the true nature of which was shown on laying the cavity open.

Native butchers found hiding the diseased livers.

Cattle brought for slaughter are generally in very poor condition.

The Inspector states they are a fair average of the condition of cattle usually killed.

The native butchers are fully aware of this cyst disease, and some of the most diseased livers were not brought for the inspection of the Commission yesterday morning, until they were shown that more livers had to be brought forward, as the number of carcasses was in excess of that of the livers. When these very diseased livers were at length brought for inspection, several of the cysts they contained were cut open, and the contents removed and washed out. The Commission remarked that all the cattle slaughtered and brought for slaughter were in wretchedly poor condition. The Inspector states that they might be taken as a fair average of the condition of the cattle at all times slaughtered. The Tehsildar states that only condemned cattle—worthless cattle—are slaughtered.

The Tehsildar states that only worthless cattle are slaughtered.

Tapeworm frequently met with in man.

Dr. Smith, Civil Surgeon, informed Mr. Charles, a member of the Commission, that tapeworm in human beings is very frequently met with in Lahore.

The butchers state that the diseased portion of meat holding cysts are given to dogs.

The butchers informed the Commission that the cyst portions of the carcasses are given to dogs, but probably a great deal of it is eaten by the poor people. Even if it is given to the dogs, cysts will thereby be greatly disseminated by the dogs.

Hindoo Inspector of meat appointed by the Hindoo community.

The Commission observed a Hindoo inspecting the meat, and on inquiring, they were informed that the Hindoo community appointed this man for the purpose of seeing that really sheep and goats are killed and provided for the meat-eating portion of the community, and not dogs or any other animals.

PUNJAB.

From W. M. MUIR, Esq., M. D., C. B., *Inspector General of Hospitals, and Principal Medical Officer, British Troops, to the Secretary to the Government of India, Military Department,—(No. 32, dated 18th January 1869).* Dr. W. M. Muir.

I have the honor to acknowledge the receipt of your letter No. 1320, dated 31st December 1868, with enclosures (returned), and in reply to state that the important subject to which it refers has engaged my serious attention for some time past, and that during my recent visit to the Punjab on inspection duty I took the opportunity of personally inspecting, at several slaughter-houses, the carcasses of bullocks as they were being slaughtered and cut up prior to their issue as rations, as well as to collect, from every available source, all the information I could pick up during my passage through that section of the country. I have, moreover, carefully perused the documents forwarded along with your communication, and now take the liberty of submitting to you the conclusions at which I have arrived. Cyst disease and tapeworm.

1*st*.—That the cyst found in our horned cattle is the cysticercus medio-canellata or immature tænia, whose characteristics have been carefully studied of late, and are now pretty well understood.

2*nd*.—That this germ is completely destroyed by the agency of heat pushed to the point required for perfect roasting or baking.

3*rd*.—That the cyst has probably been long present in our ration beef, being well known to native butchers and graziers under the name of "Jowa," and will, if sedulously searched for, probably be found in rearing grounds other than those of the Punjab, and possibly in mutton as well as beef.

4*th*.—That needless alarm has been occasioned by ignorantly confounding this parasite with the trichina spiralis of measly pork, from which it is quite distinct.

5*th*.—That, so far as the records of this department go, no bad effects have been traced to it before or since its discovery in 1866; nothing approaching to "sturdy" in the living body, and no pathological appearances in the dead.

6*th*.—That the worst effect that it is capable of producing is tapeworm—an inconvenience rather than a disease, and a trifling cause of inefficiency in this army.

7*th*.—Admitting the fact of the comparative prevalence of tapeworm among the troops who serve in the Punjab, and the presumption which is strong in favor of the disease being caused by the troops eating encysted beef in an imperfectly cooked state, yet it must not be forgotten that water, vegetables, and fruit are as capable of being the vehicles of the introduction of the "proglottis" as beef, inasmuch as it may then be presumed to be in a *live* state.

8*th*.—That a large European community in the Punjab is known to consume, with impunity, the very same beef, often the identical carcasses (if I am not misinformed) rejected as unfit for troops.

9*th*.—For these reasons I am perfectly satisfied that encysted beef, as it is found in this country, may be safely tendered and consumed as rations; and I am prepared to take the whole responsibility of this step upon myself, on the simple condition that such beef be thoroughly cooked.

10*th*.—In the present state of public feeling, however, I think that it is expedient that those parts of the animal only which are free from cysts (and this the Commissary General reports would at once be a great saving and remove the embarrassment he is at present suffering from in the matter of supply) should be issued; that those in which a few isolated cysts exist, and in the rarer instances (so far as my observation goes) in which they are more generally disseminated throughout the carcass, be *for the present* rejected and *burnt* (burying is not sufficient, for reasons which it is not necessary to go into here); and that the inspection of the meat before issue should continue under medical supervision. In a short time I predict that the apprehensions which have been needlessly caused by faulty observation, and more faulty inferences, will have died out, and cysted beef will be as unsuspiciously and harmlessly consumed by our troops as cysted ham is, every morning, at our own breakfast tables.

Extract from a letter, No. 966, dated 31st December 1868, from A. C. C. DERENZY, Esq., *Sanitary Commissioner, Punjab, to the Secretary to Government of Punjab.* A. C. C. DeRenzy, Esq.

As requested in your No. 4482, dated 30th current, I have the honor to return the original enclosures forwarded with your letter No. 4395, dated 21st idem.

3. The extraordinary prevalence of tapeworm amongst the Artillery at Mooltan drew my attention to the subject some years ago, and I hope shortly to be able to report the result of my observations thereon.

PUNJAB.
Surgeon Major J. T. C. Ross.

Remarks on the Cyst-infected Meat of the Punjab, by J. T. C. ROSS, Esq., F. R. C. S., *Surgeon Major,—dated 23rd May* 1868.

Prevalence of cyst disease.

From the following tables it would seem that the presence of cysts in the horned cattle killed for rations was less prevalent in 1867 than in the previous year, but that they have returned in greater numbers in the first three months of 1868. There is evidently, therefore, no real diminution of the disease, and no measures appear to have been instituted for its prevention or remedy.

	Number of animals slaughtered for rations.	Number found infected.	Percentage of infected animals.	REMARKS.
	RAWUL PINDEE.			
1866, from 19th January ...	1,305	111⅓	8·4	Taken from Bengal Sanitary Report for 1866. No animals were found infected in July, August, and November.
1867, whole year ...	2,849	63	2·2	From return given by Assistant Commissary General, Rawul Pindee, for every month in the year.
1868, first 3 months ...	461	66	14·1	Ditto ditto ditto.
	CAMPBELLPORE AND SYDUN BAOLIE IN 1867-68.			
1866	485	26⅓	5·3	From Sanitary Report for 1866. No animals found infected in January, February, August, September, October, and November.
1867	970	3	·3	Every month in the year; return given by Assistant Commissary General.
1868, first 3 months ...	226	0	0	Ditto ditto ditto.
	MURREE.			
1866, 4 months	213	9	4·2	From Sanitary Report for 1866. Reports in May, July, August, September; no cysts found in other months.
1867	1,380	9	·6	Every month in the year; return given by Assistant Commissary General.
1868, first 3 months ...	19	0	0	Ditto ditto ditto.

It has been remarked that the number of animals found infected is greatest in the cold weather months, January, February, March, October, and December, but the following statement does not bear this out, except at Rawul Pindee.

In 1866, at Rawul Pindee, of the 1,305 killed and 111 found infected, 756 were killed and 95 found infected in January, February, March, October, and December; the remainder, 549 and 16, were in the months of April, May, June, and September.

At Campbellpore, 337 and 16 are the numbers for April, May, June, and July; the balance, 148 and 9½, in March and December.

At Murree, all found infected were in the months of May, July, August, and September.

In 1867, at Rawul Pindee, of the 2,849 killed and 63 infected, 1,334 and 52 are the numbers for the cold weather months; 1,515 being killed and 11 found infected in the six hot months.

At Campbellpore and Sydun Baolie 486 were killed in the six cold weather months, and none found infected; 484 in the six hot, and only 3 found infected in July and August.

At Murree 266 were killed in the six cold months, and 4 found in October; 1,114 in the six hot months, and 5 found in May and June.

	Number of animals slaughtered for rations.	Number found infected.	Percentage of infected animals.	REMARKS.
PESHAWUR.				
1866, 3 months	793	26	3·2	From Sanitary Report for 1866; three months only, March, April and May, no cysts being found in other months.
1867	The return is given in pounds; 2,310 lbs. were destroyed as cyst-infected in February, September and October only, during the year. The number of animals slaughtered altogether could not be ascertained.			
1868, 3 months	1,210 lbs. were rejected in the first three months, 65 lbs. in February, the remainder in March.			
NOWSHERA.				
1866, 7 months ...	744	29	3·9	From Sanitary Report for 1866, March, April, May, June, July, August, and December; cysts not found in other months.
1867	3034 lbs. rejected in December only of the year.			
1868	13,473 lbs. rejected in January, February, and March.			
ATTOCK.				
1866, 9 months ...	262	22	8·4	From Sanitary Report 1866; cysts not found in January, February, or May.
1867	579 lbs. rejected in the year; 112 lbs. in February and 367 lbs. in December.			
1868	156½ lbs. rejected in one day in February only.			

Prevalence of cyst disease.

The incompleteness of the above return forbids any comparison with the neighbouring district, Rawul Pindee. The Peshawur Commissariat Officer informs me that the numbers of slaughtered cattle, and those found infected among them, could not be ascertained for 1867 and 1868, "as pounds are what we look to, to know what the loss is." It is a pity similar returns from the two districts were not procurable.

The disease was first recognized at Rawul Pindee in January 1866, and it did not occur at Campbellpore, Attock, or Peshawur until March.

The returns and reports show that the cattle first found infected came from the Jhung, Shahpore, Gogaira, Lahore, and Gujranwalla districts,—principally from Shahpore; but early in 1868, Major Lowe, the Commissariat Officer at Peshawur, reports, "all the horned cattle purchased from the Attock outpost came from the Huzara district, and those for Peshawur have come from Lahore, Rawul Pindee, and Eusufzaie districts."

The natural history of this disease in cattle would make it probable that it first originated at Shahpore, and was reproduced along the lines of traffic by the animals themselves, as they passed up-country, and thus the complaint has been spread to such outlying places as Huzara, Eusufzaie, &c.

Dr. Cobbold, the English investigator of these parasites, thus describes the origin and spread of the disease. A man or animal has tapeworm; an ordinary tapeworm may be made up of 1,200 joints or segments, about 750 of which may become reproductive; each joint or segment contains a reproductive organ, the egg-bearing portion in which could contain 45,000 eggs; these eggs are capable of escaping from the body of the worm by a natural opening in each joint, and may thus pass out of the infected body; or a joint itself may be detached from the worm, and escape through the natural passage of the animal on the ground, where, having an independent existence, and being able to travel in all directions, and the eggs in its interior being set free by the death of the segment, their dispersion brings about the continuance of the species, the agencies of earth, air, and water assisting in the spread.

PUNJAB.
Surgeon Major J. T. C. Ross.
On cysts and tape-worms.

Every perfect egg contains a young tapeworm larva: when an egg is swallowed, the gastric juice dissolves the egg covering and sets the embryo free, which immediately proceeds to bore through the walls of the stomach, and travels onward until it finds its recognized and natural resting place in muscles or elsewhere.

Professor Davidson at Netley thus, also, shortly puts the whole process:—

"A vertebrate animal harbours in its intestines a sexually mature and perfect tapeworm; the ova of this worm pass to the outer world, and are disseminated among grass, fruits, vegetables, or water. By means of some of these agents, as materials for food or drink, they are introduced to the intestines of the second animal, and here escaping from their strong investing egg capsule, the embryos, by means of their boring apparatus, pierce their way to the inner organs and become encysted, passing through those intermediate stages of growth, during which they are known as cysticerci or hydatids. Finally, by means of animal food containing them, these larval forms reach the intestines of the third animal, where the ultimate change of transformation into tapeworm takes place."

The cysticercus cellulosæ of the pig is mostly found in all the muscles of the animal, and has been found in man—in the eye, brain, and muscle of the heart.

The cysticercus mediocanellata, or bovis, of horned cattle is yet only known to occur in the muscles and internal organs of the animal, and has, as yet, never been found in man.

The tapeworm from the pig has its head furnished with suckers and armed with hooks; that from beef is unarmed, having suckers only.

It is only within the last twenty-five years that researches have gained an insight into the generation and development of these parasites.

In 1853, in Germany, the experiment was first made of making a pig eat a piece of tapeworm, and 4½ months afterwards the animal was found infected with the cysticercus cellulosæ. In 1855 similar experiments were made on man, and several persons being fed with these cysts, tapeworms were passed two or three months afterwards.

This particular parasite, the cysticercus mediocanellata or bovis, was first discovered in Germany in 1855; but it is only very recently that its presence has been so much brought to notice.

Dr. Thudicum, in his report to the Medical Officer of the Privy Council in 1864, writes:—

"1. The tænia mediocanellata has been observed in London in the present year, but it has only just been zoologically established as a distinct species.

"2. Only young calves can be infected with the cysticercus mediocanellata.

"3. It may be found that the cysticerci do not long survive the adult stage of the host in which they live, and that therefore well-seasoned ox beef, or old cow or bull beef, is always free from them.

"4. The cysticercus has not yet been found in beef."

Statements Nos. 3 and 4 are now proved entirely incorrect.

Dr. Cobbold, in his edition on tapeworm of June 1866, now says of England, that tapeworm from beef infests the people more than the tapeworm from the pig; that out of 120 passed worms examined, 95 had their origin from infected beef; and he otherwise proves that in the present day the flesh of cattle used as food is more commonly infested with the larvæ of tapeworms than the flesh of swine.

Dr. Cobbold fed a calf with matured segments of the unarmed tapeworm: three months afterwards it was killed and found to contain 8,000 measles (or cysts), each one containing the young of the worm; at the time of slaughter the animal appeared perfectly sound and in good condition.

The after-life of animals thus infected is not yet thoroughly understood; it is supposed that it takes about one year "for the measles to lose their power of doing harm to the consumer. In this time a natural death of the larvæ results from calcareous degeneration."

Observers in the Punjab record that it is the fattest animals that produce the most cases of infection; it is the same in England; probably the cysts grow and develop themselves from the greater amount of nourishment they can acquire as the animal improves in condition.

It is also known in England that parasitic diseases have their seasons, in which they are common, out of which they are rare; thus measles in pigs, and hydatids in sheep, are only found, as a rule, in the colder months of the year.

There is no certainty as to how long this disease may have been prevalent among the cattle of the Punjab. Major Lowe, who has paid much attention to the subject, states that old residents (native) at Peshawur say that cysts (called *jowa*) have been recognized from time immemorial.

Major Davidson, writing from Rawul Pindee, January 1866, thinks it probable that cattle have been similarly affected for years, and quotes evidence of cattle dealers who supply the

Rawul Pindee Commissariat. "We well know that in fat cattle there is a kind of secretion called *jowa*; it is not an insect: we eat the meat, and have never felt any ill effects." Surgeon Major J. T. C. Ross.

I could obtain no other reliable evidence on this subject.

On cysts and tapeworms.

My own opinion is that the disease is recent. It is only since 1865 that cysts have been recognized to infect beef in England, and with all the care there used, it is only natural to suppose that if it had been present, it would have been discovered before. The cyst is such a marked and distinct object, as seen in the buttock of a well-conditioned ration animal, that, speaking from my own experience, I cannot understand how, if it existed long in the Punjab, it could have been passed over. In 1861 and 1862 I inspected the rations at Péshawur four or five times every week, and if cysts had been present then, I cannot conceive how they could have been overlooked.

From the foregoing account the origin and spread of disease is easy to understand. It is seen how, from the casual introduction into a country of one tapeworm, its eggs may be scattered all over the land, the grass, the water, the dust being all, insensibly, foci of the disease; and the more animals that become in time affected, the more it spreads among all the herds. It has been proved that a measly sow impregnated by a measly hog does not bring fourth measly young; therefore we may conclude that the same holds good in horned cattle.

It seems perfectly hopeless to attempt to eradicate the disease from an infected breed by medicine, or changes of food, pasture, or water; but by preventive measures measly pork has almost ceased to be found in England.

In 1854 measly pork was exposed for sale in every London market. Dr. Thudicum in his inspection during 1864 did not find one specimen.

At places of export and import measly pigs have been stopped. If such meat is exposed for sale, it is confiscated and the seller fined; thus the great difficulty of importing, selling, and avoiding seizure has been an almost perfect prevention to the extension of the disease.

These prohibitions and restrictions have brought almost to perfection the power of rearing pigs without these parasites, and Dr. Thudicum states, "the large breeding establishments of pigs in Germany, Holland, Belgium, and Ireland breed pigs which are as free from parasitic disease as those of the best English breeding establishments. During 1867, 49,175 healthy swine were imported into the United Kingdom.

As far as present knowledge goes, it would appear to be impracticable to expect to eradicate the disease from the present infected parts of the Punjab. If the disease in cattle were as easy to detect as it is in pigs, prohibitive measures might be adopted against their sale; but no certain means of detection before death being at present known, the disease can only die out by breeders not being able to sell their present stock of cattle, and they may thus, in time, rear up fresh breeds that will prove untainted; the accounts given of the condition of cattle in the breeding districts all show that some change and care in the pasture, feeding, and herding of cattle is required.

But in the meantime a very large yearly loss is being sustained by Government in the destruction of its ration meat, and the disease may so go on spreading (for there is nothing that can prevent its doing so by natural causes) until beef may cease to be procurable for rations.

It appears to me that the only course open for the provision of future years is to establish breeding studs, where animals can be fed properly from birth; or to purchase them very young, before they have been turned out into jungles to graze, and to stall-feed them entirely and with care until they attain the age to be killed for ration, which ranges from 2½ to 4 years.

I cannot ascertain whether any attempts have been made in England to preserve the population from cyst-infected beef.

At one time it became a question at Rawul Pindee whether thorough cooking of the infected parts would not render their consumption innocuous. A committee inspected thoroughly boiled and roasted joints, and recorded that the parasite had not lost its vitality, but that in baked portions the cyst had become coagulated. It is recorded by Major Lowe that the people who eat beef at Peshawur do not mind the disease being present in it, and do not suffer from tapeworms, but they cook the meat entirely by baking and making it into force meat.

Salting, smoking, and perfect cooking are reported by Dr. Thudicum to destroy the contents of all cysts in pork, whose interior can thus be reached; but it does not follow that some cysts will not escape destruction, whose contents can as well spread the disease as if they existed in greater numbers. Dr. Cobbold states that boiling water destroys the vitality of the measle in pork. No similar experiments appear to have been made with the flesh of cattle.

It must therefore remain at present, I think, a very doubtful question whether any amount of barrack cooking would render the parts safe to be eaten. While perfectly certain

PUNJAB.
Surgeon Major J. T. C. Ross.
Prevention of cyst disease.

that under-done meat is dangerous, it is not so certain but that thorough baking might prevent much ration meat being condemned.

Very great care and supervision should be exercised to ensure diseased meat being thoroughly destroyed at the stations where it is often rejected. At Nowshera the Medical Officer and Quarter Master informed me that the condemned meat had been known to be dug up, and might be offered for sale in the bazaar: burning before burial is the only safeguard against this, as burying, except at a very great depth, not only incurs the above danger, but the flesh might be exhumed by animals of the jungle, who would thus become infected, and their droppings contaminate the grass in the district.

Dr. Cobbold has recently stated that mutton, hitherto supposed to be perfectly innocuous, is liable to harbour the larvæ of tapeworm. The type of worm has not as yet, however, been decided on, but joints of mutton have been seen to contain hydatid-like cysts, and specimens of such measles in a calcified condition have been exhibited to the Pathological Society of London. Once a perfect specimen of an armed cysticercus was found in the interior of a mutton-chop.

The above would seem to show that it would not be premature to take precautions about this, and that sheep and horned cattle, at the infected stations, should not be allowed to feed in the same parts.

I do not think that medical officers in the Punjab stations are at all of the same opinion as to the type of tapeworm passed by their men. In many cases the head was stated not to have come away; in these the presumption would be that it was of the armed species from pork, and only one medical officer informed me that the head seen was of the unarmed species (from beef.) It would be strong evidence on the subject if extended and careful observations (by microscope) were recorded on this point, and should determine the question how much tapeworm arises from pork, and how much from beef.

In the present state of the station piggeries, except at Peshawur, any amount of disease might exist among swine, and be disseminated among the troops.

MEERUT.
Dr. J. Fleming.

From J. FLEMING, Esq., M. D., *Staff Assistant Surgeon, to the Deputy Inspector General of Hospitals, British Forces, Meerut,*—(*dated 27th May* 1870).

In reply to an official letter from J. H. B. Hallen, Esq., President of the Cattle Plague Commission, dated Camp Lucknow, 4th May 1870, requesting me to communicate the nature and treatment of the disease that I observed among cattle at Meean Meer, I beg that you will forward to the President and Commission the following remarks based chiefly on a few visits to the slaughter-yard of that station during last year.

A short paper on "Cyst-infected Meat" was forwarded to the Inspector General of Hospitals on the 24th of April 1869, and a copy afterwards appeared in the *Indian Medical Gazette* for June following, to which paper I beg to draw the attention of the Commission. It refers particularly to the extraordinary prevalence of the "Cysticercus Bovis" (Cobbold) in the cattle of the Punjab, and suggests a method of prevention deduced from the facts obtained by the best experimental helminthologists. I can hardly add anything to what has been already written on the subject, except to refer to an experiment performed in 1866 by that distinguished investigator, Dr. Cobbold of London. He fed a heifer with ripe proglottides from tapeworms, and about a year after, when the animal was slaughtered, he found that the developed cysticerci had undergone a calcareous degeneration, and could only be recognized by the unaided eye as minute yellowish points on the muscles, but whose nature could be made clear by microscopic examination. From this experiment he considers it proved that a period of 10 or 12 months is fully sufficient to insure the natural death (by calcareous degeneration) of the smaller tapeworm larvæ which reside in cattle. (*Vide* his Supplement to Helminthology, pp. 33 and 34). If such is really the case, it is an important discovery, and it follows that cyst-infected cattle, if kept for 12 months and supplied with clean food and drink, would at the end of that period, when slaughtered, be incapable of conveying the tapeworm disease to man. This, in my opinion, requires confirmation, and is worth a trial before being accepted as a general rule; the opportunities being numerous in India for doing so. I have not observed the minute yellowish specks in the beef which Dr. Cobbold mentions, but I have noticed cysts in a state of degeneration; nevertheless, if his rule be true, they must have been present, as there is reason to believe that the conditions for the propagation of cysticerci always exist in most parts of the country.

A few visits to the slaughter-yard at Meean Meer will be sufficient to convince the most sceptical that parasitic diseases have a firm hold on the cattle and sheep of this country, and that they may ultimately be the means of seriously affecting the supply of animal food, besides propagating themselves in man and animals generally. The condition of the cattle

at Meean Meer is probably not worse than in many other stations in the Punjab, where the parasites may have escaped attention, or where no examination had been conducted, and the bad, unwholesome, lean flesh would be attributed naturally to a dry season and inferior food. The following are the parasites which I observed often present in the same animal :— MEERUT Dr. J. Fleming

I.—Cysticercus Bovis (Cobbold).
II.—Cysticercus Tænia Echinococcus.
III.—Fasciola Hepatica.
IV.—Amphistoma Conicum.

I.—The Cysticercus Bovis or Cysticercus Tænia Mediocanellata has been referred to already (*Indian Medical Gazette* for June 1869), and methods suggested to prevent its ingress to cattle and man, for there can be no doubt but that it causes the majority of the tapeworms in this country which infest our soldiers and the civil population. Tapeworm disease is much more extensive in India amongst men, women, and children than we are aware of, and it is no doubt rapidly increasing, though there is a difficulty in ascertaining exactly to what extent. During a short period at the Landour Depôt last season, I noticed that out of a strength of about 30, who were in or attending hospital for various diseases, 8 were affected with tapeworms derived from beef. What share the lower animals have in the propagation of the disease is still a problem; but it is certain they are affected to a great extent, possibly with different species, or different stages of the same species, though it may be not all. In illustration of this I have removed as many as a dozen sexually mature hookless (?) tapeworms, averaging ten inches long, from the small intestine of a Landour rat. Cysts.

II.—The Cysticercus Tænia Echinococcus was present in almost every case, occupying the lungs and livers of the cattle to a greater or less extent; indeed it was often a matter of surprise how the functions of the liver, and especially respiration, could possibly be carried on, so extensive was the invasion of these parasites.

They are the larval stage of the Tænia Echinococcus, according to Dr. Cobbold and others; but Keschewmeister says that two forms of tænia equally produce them. However, it is certain that the eggs of the Tænia Echinococcus of the dog will, when introduced into the system, produce this form of disease in man and animals, and it would be interesting and important to ascertain the prevalence of the mature form of the parasite in the dogs of the Indian villages.

The wolf, the fox, and the jackal, besides many other animals, may possibly harbour the Tænia Echinococcus in this country as well as the dog, but it still remains to be seen if such is the case, and to what extent they influence the spread of hydatid disease in cattle and sheep.

The treatment of hydatid disease, which naturally presents itself, is entirely preventive and based on sufficient data to warrant its partial success, at all events in India.

Four-fifths of the number of dogs, particularly in the villages and cattle districts of the Punjab, and in fact in all infected districts, should be destroyed, and the larvæ of the Tænia Echinococcus in the various slaughter-yards should share a similar fate, to prevent the chance of their being thrown out as useless refuse and swallowed by the numerous dogs, jackals, and wolves that frequent those places. Should the Commissioners decide to recommend a destruction of the dogs, which seem to be the common property of the villages, it is hoped that a *post-mortem* examination may be conducted to ascertain the prevalence of the Tænia Echinococcus and other forms of parasites, and thus practically contribute to the advancement of the science of helminthology. Some method might be introduced for cleansing the foul, polluted ponds in the infected districts, and affording to cattle a comparatively pure drinking water, which would assist to prevent the spread of almost every form of animal parasite which resides in cattle and sheep.

III.—The extent of disease caused by the Fasciola Hepatica and other Trematoda in the cattle, sheep, &c., in this country has not been ascertained, but their share in the production of epidemic disease has, I believe, been recognised in Great Britain and Europe generally, and it is possible, from their prevalence, that they play an important part in the diseases of animals in India. Trematoda.

IV.—Amphistoma Conicum. This parasite was noticed in numbers in the liver, associated with the Fasciola Hepatica. Dr. Cobbold refers to one in his work on Entozoa, p. 38, found in the paunch of a zebu in the London Society's Menagerie. An extended examination will no doubt prove the existence of others, but even the prevalence of those enumerated, especially the first two forms, induces us to believe that the country, at present a breeding ground for parasites, is invaded by a widespread preventible disease, dangerous alike, directly and indirectly, to man and the resources of the country. I have preserved the species of parasites enumerated in this letter, and they can be examined at any time by any one interested.

MEEAN MEER. Dr. J. Fleming.

Remarks on Cyst-infected Meat at Meean Meer; its nature and prevention. *By* J. FLEMING, Esq., M. D., F. R. C. S., *Staff Assistant Surgeon.*

[INDIAN MEDICAL GAZETTE, JUNE 1869.]

On cysts and tapeworms.

Any cause which affects, directly or indirectly, the health or wealth of a population is of sufficient importance to demand a careful study. We shall see in the sequel that the cyst-infected meat at Meean Meer, and I am told in many other parts of the Punjab, is a cause which may operate in both ways with pecuniary loss to Government and a serious injury to the public health. From a return, furnished me through the kindness of the Executive Commissariat Officer in this station, it appears that 2,651 cattle were slaughtered during the year 1868 for the use of the troops, and of this number 235 were found cyst-infected, and accordingly condemned, showing a percentage of 8·86. In the years 1866 and 1867 the cattle are shown to have been quite free from cysts. For the month of January, this year, 337 were slaughtered, and 125 were found cyst-infected, being a percentage of 37·09. For the month of February 381 were slaughtered, and 104 condemned for the same cause, giving a percentage of 27·29. Therefore the total number of cattle found cyst-infected in this station up to, and for the month of February amounts to 464, which, calculated at the average price of Rs. 8-8 per head, gives a total loss to Government, not including other expenses, of Rs. 3,944. From this return it is evident that the disease is increasing; but it is likely that the numbers found cyst-infected will vary inversely, according to the amount of rainfall. The Executive Commissariat Officer informs me that the cattle purchased from every district in the neighbourhood of Meean Meer are cyst-infected, equally with those from Hoshiarpore and Ferozepore. The cyst-infected meat is caused by the scolex condition, which is the second stage towards full development of the tænia mediocanellata, and is found in almost every tissue of the animal, but mostly well observed in the tongue and between the fibres of the muscles.

The cyst is easily detected, and often exceeds half an inch in length, while the enclosed invaginated worm, when protruded with its caudal vesicle, may be even more than one inch long, but many others, in different stages of growth, cannot be detected by the unaided eye.

There is some little difference, perhaps worth mentioning, between the drawings which illustrate this subject in Cobbold's work on Entozoa, and the specimens from the beef in this station which I have examined. In these latter there is a central apparently sucking disc situated between the four large discs, corresponding to the place of the rostellum in the cysticercus cellulosæ, and in the work referred to this disc is wanting; but I believe they are really the same, and the different appearances may be owing to a lithographic error in Dr. Cobbold's book. The same remarks are applicable to the drawing of tænia mediocanellata in Dr. Aitken's "Practice of Medicine." It is now well known and proved by actual experiment that when these larvæ or solices are introduced into the human body in a living state with the food, they become developed into mature tapeworms. No doubt cooking the meat well should destroy them; but I think it would not be an infallible remedy, and besides might be difficult to carry out at all times, as the idea is very popular that meat should be under-done.

Tapeworms are not pleasant companions, and should, if possible, be avoided, since they give rise to unceasing annoyance to their unfortunate hosts, and produce symptoms often of a serious nature. Upwards of a hundred cases are recorded, both in our own country and on the Continent, where the scolex condition of the tapeworm has infested the human body and caused death; and there is reason to believe that many cases returned as "died from natural causes" may have been owing to the development of immature tænia in the brain, or in some vital organ. Certain epileptic seizures which in many cases terminate fatally can be distinctly traced to tapeworms, and many instances are on record where the expulsion of the worm from the intestines was followed by a complete cure of epileptic convulsions. The development of immature tænia in the brain—even one—is sure to cause death, and a cure at present is beyond the reach of medicine and surgery. Tapeworms cause an amount of distress that, from their nature, can readily be imagined, and continental observers, who usually lead the way in investigations of this sort, have gone so far as to note down sets of symptoms for their diagnosis, ending with mania or imbecility. The development of the cysticercus tænia mediocanellata in cattle cannot add to the nutritious value of the meat, but rather the contrary, while it serves admirably to propagate an abominable disease in man.

The importance of a subject which bears such a direct reference to the health and well-being of a European and Native population is very plain, and should induce steps to be taken to prevent a disease which naturally tends to increase rather than to diminish. The state of the inhabitants of Iceland, Russia, and Abyssinia affords us practical lessons, from which we should profit in a great measure. It is reported that in Iceland one-sixth of the deaths of the population is caused by the scolex of a tapeworm which infests the dogs, and even in this station it is most remarkable to see the great number of slaughtered cattle, otherwise apparently healthy, whose livers and lungs especially are disorganised by masses of these immature tapeworms. The hydatid disease, as the latter is called, is not very common amongst soldiers in this country, but it is sometimes observed; I should expect it, however, to be common

amongst the native population, considering the relatively very great number of dogs to be found in the Indian villages, and it is certainly common amongst cattle and sheep. From what we know of the wanderings, life changes, and development of this class of parasites—and that knowledge is not a theory, but the result of actual experiment and observation—we are in a position to point out measures, prophylactic and definite, which, if properly carried out, would have the effect of getting rid of the disease. MEEAN MEER. Dr. J. Fleming.

Tapeworms, whether they occur in the mature or immature forms in man or animals, especially epidemic, cannot be looked on in any other light than indices of bad sanitation in the towns or districts where they are prevalent. I will not say that the sanitary condition of the villages and towns of the Punjab is inferior to, and more neglected than, other parts of India; but I cannot avoid stating that the condition of some of the villages in the Punjab, through which I have passed, is a disgrace to any executive professing to have for its object the care and welfare of the population. To any one who has the courage to examine the interior and outskirts of some villages, it will be apparent that the most ordinary rules of sanitary science are utterly disregarded, and he will see, during the course of the day, men, women, and children obeying the calls of nature in every possible direction, usually close to some pond, which is near every village, and cattle coming to drink and roll in the pond, which probably already contains, in its water and mud, tapeworm eggs beyond human calculation. This, then, is the true source from which cattle become cyst-infected, whether they receive the eggs from the water or grass; since the human body is the host for the mature parasite. If an enquiry should be instituted, I would expect to find full-grown tapeworms amongst the population in the towns and districts which furnish cyst-infected cattle, and their ova also, particularly in the water used by the latter.

As our knowledge of the natural history of this class of parasites or entozoa is tolerably perfect, it enables us to suggest plans for their destruction, before they arrive at the cysticercus stage.

First.—Find out the districts which supply the cyst-infected cattle, and let there be a thorough examination for tape-worm amongst the inhabitants of those districts.

The mature worms, when found, should be expelled from their hosts by some powerful anthelmintic medicine, and the ova destroyed.

This plan, if properly carried out, would be most successful, and the propagation of the disease would thereby be entirely prevented.

Second.—Examine microscopically the water, &c., of those infected districts for the ova of the tape-worm, so that, if it is found to contain them, it should be avoided when practicable.

Third.—Establish a system of latrines in every village, under the superintendence of the chief zemindar, who should be accountable for the general sanitary condition of the whole neighbourhood. By such a plan, at all events, attended with little or no expense, there would be less tendency for the ova to pass into the water or food used by the cattle, or to be washed by the rains over the whole district; but, on the contrary, the ova would be localized, and, perhaps, be destroyed in a short time by slight decomposition.

It has been suggested to organize cattle farms under the management of the Government, and thus insure a supply of good well-fed cattle for the use of the troops; but it might be rather difficult to carry this out, and it would certainly be attended with great expense, besides checking, in some degree, the trade of the country and preventing local enterprise. Neither would such a system produce non-cyst-infected cattle, if the sanitary arrangements already proposed were to be neglected.

MOOLTAN DIVISION.

From W. E. BLYTH, Esq., *Deputy Commissioner, Montgomery, to the President, Cattle Plague Commission, Cawnpore,*—(*No.* 330, *dated 3rd May* 1870). MONTGOMERY. W. E. Blyth, Esq.

In reply to your letter B, dated 28th April, I have the honor to state as follows.

1. There has been no disease among cattle since 1867, and with reference to that year, I will answer your queries *seriatim* from the Police Report, dated 4th December 1867.

2. *Name of disease.*—These diseases prevail amongst the cattle:—1st, *suth* or stroke; 2nd, *chechuck* or *seetlah;* 3rd, *mukhuri* or discharge from mouth.

3. *Symptoms.*—The diagnosis of the disease called *suth* is,—swelling in the neck and ribs, and distention of stomach; blood is voided instead of dung; discoloration of skin and hair; great difficulty in breathing and swallowing food, occasioned by obstruction in the throat; there is great heat in the body. Sometimes there is no external swelling or symptom, but congestion of blood in the intestines occasioning great uneasiness to the animal and inability to eat; ulceration of tongue also occurs.

MONTGOMERY. W. E. Blyth, Esq.

4. That of the disease called *chechuck* and *seetlah* (cowpox),—cutaneous eruption as in the case of human beings; swelling of the palate and tongue; skin becomes black, and eyes red; disinclination or inability to eat, and there is a watery discharge from the mouth.

5. That of the disease called *mukhuri* is,—ulceration of the legs and tongue, a flow of frothy matter from mouth.

6. *Average duration of attack.*—In the first disease, *suth*, death in some instances ensues almost instantaneously; sometimes the animal either recovers or dies within two or three weeks.

In the second the affected animal either recovers or dies within two or three weeks.

In the third it generally lasts nine or ten days.

7. *Average number of deaths per cent. of those attacked.*—The average number of deaths per cent. of those attacked cannot be given, as no record was kept of it.

8. *Contagious or not.*—Yes, all these diseases are considered contagious, as the affected animals were separated from the healthy ones.

9. *Post-mortem appearances, if any, observed.*—These were not observed, hence no information is available.

JHUNG. J. E. Wakefield, Esq.

From G. E. WAKEFIELD, Esq., *Offg. Deputy Commissioner, Jhung, to the President, Cattle Plague Commission, Lahore,*—(*No.* 468, *dated* 16*th June* 1870).

In reply to No. 287, dated 16th May, states that after very careful inquiry it has been ascertained that cattle disease does not exist in an epidemic form in this district; there are sporadic cases occurring of the disease which was prevailing last hot season, but nowhere with such force and persistence as to warrant the Committee being invited to visit any particular spot, as, under its present condition, there would be no certainty as to their finding the disease in any one locality whence cases had been reported.

In case the disease should develop in any tangible manner, immediate report will be sent to the Commission.

The separate memorandum appended shows the symptoms of the disease, of which scattered sporadic cases are reported.

MEMO. FORWARDED WITH No. 468, DATED 16TH JUNE 1870.

Symptoms, &c., of cattle disease, of which scattered sporadic cases are reported in the Jhung District.

The eyes of cattle affected become blood-shot and water; great thirst exists; after two or three days a bloody flux sets in, sometimes only a white flux; in an average of eight days the animal dies or recovers. The animals refuse all food, but drink greedily; there is great emaciation. The mortality is very great, *i. e.*, of those affected few recover. The general report is that there is no remedy. The zemindars, however, mix butter with sugar or water and administer it, but they admit that the effect is seldom beneficial.

MOOLTAN. A. Brandreth, Esq.

From A. BRANDRETH, Esq., *Commissioner and Superintendent, Mooltan Division, to the Secretary to Government, Punjab,*—(*No.* 145, *dated* 14*th July* 1870).

In reply to your Circular No. 38, I have the honor to enclose a copy of my note to Colonel Ferris, and his reply, which will show that there was but little disease here. It corroborates the statement in my former reply to the Commissioner.

2. From conversation with several intelligent natives, I have been led to believe that the cattle succumb more rapidly than formerly to any contagious disease, and very probably because, as stated by them, the cattle get little or no salt now. I believe some similar observation was made in England during the cattle plague. If I recollect right, the disease in Gujranwalla followed on an unusual fall of rain which led to the growth of much poor, weak, and long grass, and I think this also corresponded with the state of things in England. But I do not know enough of the subject to feel that the above opinion is worth even recording.

Demi-official letter from A. BRANDRETH, Esq., *Commissioner, Mooltan Division, to the Deputy Commissioner, Montgomery,*—(*dated* 5*th July* 1870).

What percentage of your cattle do you think died at Jhung? Our idea was that it was hardly four or five per cent. Let me know quickly if you can. Have they had any dying in your new district?

Demi-official letter from MAJOR R. J. D. FERRIS, *Deputy Commissioner, Montgomery, to the Commissioner and Superintendent, Mooltan Division,—(dated 10th July* 1870). MONTGOMERY. Major R. J. D. Ferris.

As far as I can recollect, 15 per cent. was supposed at first to be the loss in the Chinote Tehseel, but this afterwards was believed to be much exaggerated. The disease I do not think lasted more than three weeks. It came as far as the borders of the Jhung Tehseel, and then disappeared altogether. The loss at Jhung, as far as I recollect, did not amount to more than 3 or 4 per cent. I reported the appearance of the plague at the time, and I know afterwards that I came to the conclusion that I had been taken in. There was little or no reduction of the Tirnee revenue, and I got very few petitions for reduction, and these chiefly from people on the Gujranwalla border, where I heard reductions had been largely made.

I have written this from recollection, but I think you will find it very nearly correct.

From G. E. WAKEFIELD, Esq., *Officiating Deputy Commissioner, Jhung, to the Commissioner and Superintendent, Mooltan Division,—(No. 270, dated 18th August* 1870). JHUNG. G. E. Wakefield, Esq.

In reply to No. 154 of the 7th ultimo, with enclosures, requiring a report on the cattle disease which prevailed in Chinote Tehseel last year, reports that the cattle disease was an epidemic of the same form as that which was prevalent in the Gujranwalla bar.

2. The statistics of mortality, with value of cattle that perished, calculated according to the Gujranwalla rates, are as follows:—

		Rs.
1,109	male buffaloes valued at Rs. 30 each	33,270
3,478	female „ „ at „ 40 „ ...	1,37,120
3,741	bullocks, at Rs. 20 each	74,820
6,467	cows, at Rs. 15 each	1,07,006
14,795		3,51,215

3. The disease has not appeared in an epidemic form this year, but sporadic cases have occurred from time to time, and this was duly reported by the undersigned to the President of the Cattle Plague Commission, who have determined on coming to Jhung to enquire on the spot into the nature of the disease.

Village Shaik Boreham, dated the 24th August 1870. SHAIK BOREHAM.

Evidence of villagers of Shaik Boreham, four miles south of Kamalia, close to the high road between Jhung and Montgomery. The disease *peer* has been affecting the cattle of the village for the last month. It first attacked a neighbouring village in the month of Jait (April), but we do not know where it came from to the other village. Evidence of villagers. Locality. *Peer* prevailing. Source of disease.

The symptoms of *peer* are,—discharge of water from the eyes and nose, then purging follows in about eight days; off feed and water; and after four days of purging, blood is passed. It is also said that when these sick cattle see water they get frightened and die there. Some of the animals affected were inspected by the Commission. Symptoms.

A male buffalo, aged 4 years; sick 8 days. The symptoms shown are,—discharge from eyes and nose, blood also passing from near nostril; eyes sunk, eyelids almost closed; very weak; pulse about 60, and very weak; has been purging for eight days; no blood said to be passed; condition poor; has fallen off very much indeed; no eruptions; total loss of appetite; the breath is very offensive; the gums are much congested; the buccal membrane slightly congested; and there is one well-marked excoriation on the gum surrounding the central teeth; the muzzle is dry. Case.

A buffalo cow (calf) of nine months old, said to be two days' sick: off feed; lying down; viscid discharge from eyes and nose; muzzle very dry; difficulty in breathing; mucous membrane of the mouth slightly congested; breath slightly offensive. Case.

A buffalo cow, three years old; in very good condition; has been ill nine days. The owner states that the disease is called *matah*. It breaks out inside the body of cattle, as it breaks out outside the body of man. Case. Owner's statement as to the nature of the disease.

The mucous membranes of the gums and mouth are one mass of excoriation, and there is much aphthous deposit; breath very offensive; skin very hot and red about the armpits and inside the thighs; no purging as yet. When she was attacked first, she was very thirsty for the first four days, but for the last five days has been drinking less. Symptoms.

SHAIK BOREHAM.

Case. A cow, three years old, three days sick. The owner says she has the disease *matah*. He also adds—in *matah* the inside gets rotten, also that some animals in this disease purge, others do not. In those when the disease breaks out externally the animals generally live, but when the disease breaks out inside the body they generally die. A buffalo was brought forward and the owner said,—here is the external eruption,—pointing to the neck,—and this one will live. Symptoms,—lying down a little, inclined to near side; respiration quickened and labored; body hot; muzzle dry; ears drooping; mouth hot; mucous membrane slightly congested; no discharge from eyes and mouth; flanks very hollow and drawn up; no eruptions; no purging; mucous membrane of the vagina much congested; conjunctivæ also much congested; when standing up, respiration quickened, but not labored.

Owner's opinion as to the nature of the disease.

Eruptions on the skin are a favorable sign, but when the disease breaks out internally death generally follows.

Case. Buffalo cow, three years old, ten days sick; mouth healthy, except mucous membrane, which is a little congested. This animal is evidently recovering from disease, and is the one alluded to above as having an eruption and likely to live; eruptions all over the body, especially well-marked on cheek, face, and udder. The eruption generally is scaly, and consists in patches about the size of a pea, and desquamation of cuticle. The eruptions about the udder have been vesicular, and there are one or two kinds of pits, half cicatrized. Just inside of the vagina the mucous membrane along the edges of the vulva is slightly excoriated; the whole cuticle of the body is in a state of desquamation in patches.

Peer, syál, and *matah* are all names of the one disease. MUHADOOR SHAMOOZ states that these three diseases, *peer, syál*, and *matah*, are one and the same disease. *Peer* is considered so contagious that if the unaffected cattle drink from the same place as a sick one, the healthy animal is sure to get the disease. Buffaloes hardly ever recover from *peer;* of the cows, 25 per cent. die when the attack is mild, and 50 when severe. We have no remedy for *peer*. Last year *peer* did not attack this village, but the year before last we lost 60 from *peer*. Last year we did not hear of the disease anywhere. Six months ago it appeared at *Bar* (Jonapa Rana), Jhung District.

Contagious.

Buffaloes seldom recover.

No remedy for *peer*.

History.

Present number of sick. Thirteen cattle are brought before the Commission, all sick with *peer*. *Peer* is yearly coming among the cattle, sometimes in a mild form, and in others in a malignant form; in the cold weather it is generally mild. This disease attacks an animal only once; if the animal gets over the disease it won't get the *peer* a second time. He never saw or heard of an animal or man getting *peer* or *matah* a second time. There is another disease amongst the cattle of this district called *suth*. The symptoms are,—swelling all round the throat and the lungs, stomach and bowels, in fact all the internal organs of chest and abdomen become red and packed with blood; no animal ever survives—always dies within 24 hours.

Seasons of *peer*.

An animal which has recovered from *peer* is not liable to a second attack.

Another disease called *suth*. (Quarter-ill. —C. P. C.)

Symptoms.

When the skin is opened after death, no extravasation of blood is found underneath the skin, but the blood is found in large separated clots inside the body.

Season when *suth* prevails. The disease does not occur in any particular time, but it is liable to appear in the months of Shrabon and Bhaddor (July and August). Only the well-conditioned animals get the disease; the low-conditioned ones never get the disease. The younger animals, from 1 to 3 years old, when in very good condition, are most liable to this disease; our opinion is that it is contagious, because if the cattle of one village affected with *suth* mix at pasture with cattle of another village, then the disease will attack the cattle of the second village, but then the low-conditioned animal never catches the disease.

Young and fat animals most liable to attack.

Considered contagious.

Segregation not carried out. When one of any herd is attacked, the others are not separated from it, because the one attacked becomes as if hurt with a bullet, and never leaves the place where it becomes ill, and therefore cannot mix with other animals grazing.

No remedy for *suth*. We have no remedies for this disease. The last death from *suth* among the cattle occurred three months ago.

Mortality from *suth* not known. We cannot give any account of the mortality.

Another disease called *lág*. There is another disease called *lág*. This disease is produced when cattle are taken to graze near tanks, when in shallow water, and this grass causes the throat to swell. If the animal so affected does not purge it is sure to die, but if it purges it will live.

Symptoms.

Another disease called *dhukka*. (Foot and mouth disease.—C. P. C.) Another disease called *dhukka*. When the feet and mouth get sore very few die; they generally live. The very young ones sometimes die; sometimes the mouth only is affected, sometimes the feet, and sometimes both. Those only die that have the mouth affected, but very few of them die. Those that die from *dhukka* never purge.

Symptoms.

Mortality small.

Another disease called *bhooknee*. There is another disease called *bhooknee*, in which cattle die from purging blood; we do not know the cause of it, they have no discharge from eyes, nose, and mouth. They commence purging from the very first; they go on feeding from the first to the last. They die simply from purging. Last year, in the month of February, two died—one old and one young. This disease does not occur at any particular season. Few are attacked and few die. We have medicine for this disease. We soak wheat in milk and water and give it for fifteen days. We give a seer of wheat, 3 seers of milk, and 6 seers of water.

Cause not known.

Symptoms.

Deaths.

Occurs at no particular season.

Remedy for *bhooknee*.

Another disease called *pheepree*. (Pleuro-pneumonia.—C. P. C.) There is another disease called *pheepree*. In *pheepree* the lungs get congested and solid, and thick yellow water is found in the lungs. They gradually get thin, and die in 1 to 2 months, but sometimes live for a longer time.

Nature and course.

KAMALIA.

Evidence of NEEMA, *of Kamalia,—dated 24th August* 1870.

NEEMA, about 45 years old, an inhabitant of the village of Salusun, south-east of Kamalia, states that the disease *seetlah* or *vair* attacked the cattle of his village about four days ago, and he believes that the disease was brought from a place called Kurger, where cattle had the disease two months before. Neema. *Seetlah* or *vair*. Origin.

The village's name is Enayet Shah, and the disease ceased there about a month and a half ago. There is no other village between my village and Enayet Shah, and I did not hear of any other cattle being affected between the time it ceased at Enayet Shah and broke out in my village. Enayet Shah is four miles from my village.

The symptoms of *seetlah* are,—purging, which comes on in 4 or 5 days after the animal becomes ill; at first the cattle do not graze; sometimes they drink water, and sometimes they do not; no signs of fever; has not observed any blood in the purging, or offensive breath. Three are now sick; one after the other became affected; coat stands on end, and skin looks black; I have not observed any eruption on the animals, but the people say that eruptions are ripening under the skin. None have died yet, nor do they look like dying. There is a discharge from the eyes. The same disease attacked my village eight years ago. I am a cattle owner. I never lost any from this disease. This disease has not appeared in my village since 1862. When I was a child the disease attacked the cattle of my village, but I was so young that I do not recollect much about it. We used to take our cattle annually to the bar to graze; but as there has been no rain there for the last two years, we have not taken the cattle there, as there is no grass. Symptoms. Number sick. History. Last outbreak in 1862. A former outbreak about 1830. Cattle sent to the bar to graze.

Evidence of SHAIK MAHOMED, *a resident of village Khokar, about eight miles east of Kamalia,— dated 25th August* 1870. Shaik Mahomed.

Disease among the cattle in this village commenced in Asar (June), about two months ago. The disease is called *matah* or *peer*. It is called *matah* because there is an eruption on the skin. Those in which the eruption does not appear externally nearly always die; in other words, those in which the eruption grows inwardly die, while those in which the eruption comes outwardly often recover. The symptoms are,—discharge from the eyes, and the animal becomes distressed; purging comes on the 4th or 5th day; when the purging is excessive the animal generally dies; but if after a little purging the animal commences to feed again it generally lives; blood comes with the purging, and often with the urine. During the present attack eleven full-grown buffaloes, four small ones, two bullocks, one cow, and one bull calf have died, and about 20 have recovered. The mortality from this disease is from 30 to 50 per cent. I am about 40 years old, and have seen this disease four times among the cattle in my little village, which is about ¾ of a mile from the head-quarters of Khokar. This disease is always more or less present, and breaks out occasionally in a malignant form. It never attacks the same animal twice. The village cattle are watered from wells. This disease comes from all sides, but on this occasion it came from Khushal, a village to the south-east. We hardly ever take our cattle to the bar to graze, but do so occasionally in the month of Shrabon (July). The last time the cattle were taken to the bar was last year. They returned in good condition, and did not show any signs of *matah* when there, or after their return. We never import any stock—we breed our own. The *beparies* come occasionally to this village, and we sometimes sell cattle to them. Two months ago the disease *peer* appeared. It is also called *matah*. Eruptions — external and internal. Symptoms; unfavorable. favorable. Mortality. History. Four outbreaks during the last 40 years; but always more or less present. Second attack. Water. Origin. Cattle sent to the bar to graze in 1869. Stock not imported, but home-bred. Dealers come to buy.

The *beparies* and other cattle dealers in our neighbourhood are very particular about purchasing cattle which have had *matah* and have recovered and are in good condition. They may look for the marks of eruption, but they can't find them, as when the cattle get well they lose all trace of eruption. Cattle recovered from *matah* preferred.

When the eruption breaks out in cows, it is most abundant and best marked on the udder. In cattle generally the eruption is found inside the thighs and inside the eyelids, but in some few cases the eyes become blind. I have never seen disease among the cattle dealers' cattle, nor have I heard of their cattle being attacked with it. Men here are inoculated and vaccinated, but not cattle. We never inoculate ourselves with the matter taken from cattle attacked with *matah*. The cattle in this village are used for ploughing and dairy purposes, and occasionally the *kumhars* use them for carrying pottery from village to village. Eruption. Vaccination and inoculation. Uses of stock. Pack.

About 30 per cent. are used for ploughing, and the rest for milk. Barren cows are never put to the plough, but barren buffalo cows are. Cattle of the village are herded together by day, and during the hot weather are placed together in the open air and guarded; but in the cold weather each man keeps his own cattle in his own shed. Sometimes the cattle of neighbouring villages mix with the cattle of our village when at pasture. Plough. Dairy. Herding. Housing.

There is *kunkur* (gravel) in the soil at the bar, but not here. The soil is sandy here and flat. Little rain falls, and the country is supplied with water from the canals. There is Soil. Rain and water.

KAMALIA. Shaik Mahomed. Season of murrain. Hides. Hide trade.

no particular season when this disease appears, but it comes chiefly in Asar (June) and Bhador (August). There are hardly enough hides for local consumption, but when there are many deaths the moochees sell them to hide merchants.

Value of stock now, and Ten years ago.

	Rs.
The price of a good cow now is about	30
Buffaloes now	60 or 70
Bullocks now	25 to 40
Ten years ago a good cow used to be	20
Good buffaloes	36 to 40
Bullocks	16 to 30

Number of cattle decreased in ten years nearly 30 per cent. From famine and disease. Infectiousness of *seetlah*. Disposal of carcasses. Horns and hoofs.

The number of cattle in this neighbourhood has decreased nearly 30 per cent. in ten years, partly from famine and partly from disease. *Seetlah* is sometimes caught by infection, and sometimes does not appear to be infectious. The carcasses of animals are thrown out after the hides are removed. The horns and hoofs are not cared for. Other diseases are :—

Suth. (Quarter-ill.—C. P. C.) Symptoms.

Suth.—The symptoms are,—foaming at the mouth, swelling inside the throat; if the neck is not swollen, the blood collects and gets black in the region of the ribs and abdomen, and sometimes in the quarters. The animal attacked dies in from three to twelve hours, and nearly every single one attacked dies. The animals in the best condition are attacked.

Bhooknee. Symptoms. Season of attack. More fatal than *matah*.

Bhooknee.—The symptoms are,—excessive watery purging, and the urine passed is green. This disease came in Cheyt (March), and remained till Shrabon (July) last year. This disease never came to our village before last year, but we have heard of it before. At the time the disease appeared there was very little pasturage. *Bhooknee*, when it attacks cattle, is more fatal than *matah*, but not so general. Animals died in 14 to 15 days, but a few in 4 to 5 days.

Pheepree. (Pleuro-pneumonia.—C. P. C.) Symptoms. Rarer than *matah*. Curable. Considered not contagious.

Pheepree.—The symptoms are,—noise in the nostrils, heavy breathing, cough; the animals die in 15 to 16 days in bad attacks, but sometimes linger for six months. *Pheepree* is rarer than *matah* and can be cured. The lungs in this disease become heavy and rotten. This disease is not considered contagious, but has been known for years from the time of our forefathers.

Dhukka (foot and mouth disease), *Lâg*.

Dhukka is common, but none die of it.

Cause. Remedy. Kinds of grass. Cattle poisoning. Segregation.

Lâg.—This disease comes from drinking bad water. The throat swells and purging comes on. If animals attacked get *jowar* and good grass they recover. This disease also is caused from eating bad grass, which springs up on the borders of pools of bad water. The best kind of grass here is *chimree* (*doob*), and the kind of grass which causes *lâg* is called *murak*. Cattle are not poisoned in my village for the sake of their hides, but we have heard they are in some parts. We don't separate the sick from the healthy in any of these diseases.

Evidence recorded at Kamalia, 29th August 1870.

Peer prevailed in June. Statistics. Occurs every second or third year. Type varies.

JUDDAYER SULTAN and REHUNA, inhabitants of the village of Enayet Shah, eight miles west of Kamalia, state,—that the above village has 15 houses and 300 cattle. The disease *peer* was amongst our village cattle in June; about 125 died. About 200 cattle were taken ill; 75 only recovered. This disease has often attacked our cattle before; it generally appears every second or third year; sometimes it is severe, and sometimes mild. When it is very severe all the animals attacked die, and when it is mild not more than 25 per cent. of those attacked die.

Only attacks an animal once. *Syál, peer*, and *thurdeyee*. *Peer*. Symptoms of *peer*.

It only attacks the animal once in its life; sheep and goats also get this disease, but it is called, *when it attacks them, syál;* and when the cattle are attacked it is called *peer;* when our children get it, it is called *thurdeyee*. The symptoms are,—excoriations in the mouth, discharge from nose and eyes, blood-shot; offensive breath; off feed; purging. They either die or recover in 10 or 12 days.

Symptoms of *bhooknee*. Different to symptoms of *peer*.

In *bhooknee* (purging) the animal passes frequently watery stools; no blood is passed with this stool, and the animal feeds more or less through this illness, and the mouth never gets sore or offensive, but in *peer* it gets offensive. We have not observed any sores in the mouth. In *peer* there are sometimes eruptions on the body; in *bhooknee* never.

Hides. Value of cattle now and ten years ago. Increased in price.

Hides are givento the moocheos. The price of cattle is now increased. The cattle that we sold for Rs. 20 ten years ago now cost Rs. 25. Cows that use to sell for Rs. 30 or 40 ten years ago now sell for 45. The reason of this is that before the English Government annexed these Provinces the *rukhs* of the bar were not paid for, but were common land.

Bullocks fed at home. Cows sent out to graze. Yield of milk. Hides, horns, and hoofs.

Our bullocks are always fed at home; the cows are sent out to graze in the *rukhs;* all are cattle of local breed. A good cow will give four or five seers of milk. We used to take our cattle into the Jhung bar or elsewhere, but we now graze them at home. Our village cattle when at pasture mix with other village cattle. We part with our hides to the moochees, but we do not know what they do with them. The tehsildar states that the hides are sent to Mooltan and sold. The horns and hoofs are thrown away.

No remedy for *peer*. *Peer* occurs at all seasons of the year.

We have no remedy for *peer*. *Peer* occurs at all seasons of the year.

Dhoobrie, seven miles east of Kamalia,—visited 30th August 1870. DHOOBRIE.

Lumbardars REHENA and MOHAMBAH state that, 16 days ago, the disease *peer* or *mai* first attacked the cattle of this village, and we heard it had prevailed before that in the village of Khokar, one koss (two miles) to the south; but their cattle never mingled at pasture with the Khokar cattle, not on account of the disease, but their respective grazing grounds are the distance of two rifle shots off each other. Five years ago the disease was among the cattle of this village, and three years ago before that. *Peer* or *mai* prevailing. A former outbreak five years ago, also one eight years ago.

The Lumbardars' ages are, respectively, 45 and 50 years, and they have seen five outbreaks of the disease in their village; three times the disease was malignant and twice mild. Every year a sporadic case or two occurs. Five outbreaks during the last 50 years; type varied. Sporadic cases occur yearly.

When severe, 75 per cent. of those attacked die; when mild, 25 to 30 per cent. die. Cattle have *peer* only once in their lives, and those that live never have it again; we are quite positive as to this.

The symptoms of *peer* were accurately described by the Lumbardars and villagers. When blood passes with the stools then cattle generally die. When eruptions on the skin appear, blood is not passed often, and then cattle generally recover; but *matah* is severe and bad when it comes from the inside. Their grandfathers and great-grandfathers often suffered losses among their cattle from this disease. Symptoms of *peer*. Ancestors suffered losses from *peer*.

The disease is contagious, but the cattle that have had the disease once and recovered will not catch it a second time. Contagious.

They believe that the disease this year came with the wind from Khokar village. Supposed to have come with the wind from Khokar.

Pheepree has never attacked the cattle of their village in the present inhabitants' time; but in their fathers' time, about 40 or 50 years ago, they heard that three or four died from *pheepree*. *Pheepree* (pleuro-pneumonia.) Occurred in Dhoobree 40 or 50 years ago.

The cattle of their village are all home-bred; no cattle of any kind are ever imported, but bullocks of their village are sometimes sold to dealers who come to the village three times a year to buy—in Cheyt (March), Shrabon (July), and Bhador (August). They never knew of the cattle belonging to the dealers having disease when they came to purchase. Breed of cattle. All home-bred. No importation.

They remain one or two days, and their cattle sometimes graze with the village cattle; but disease has never broken out among the village cattle after the departure of the dealers with their cattle. Cattle dealing.

The disease called *suth* sometimes occurs in Shrabon (July) among the cattle, but only, as a rule, among the young and very fat cattle; but sometimes a very fat old bullock or cow gets the disease. *Suth* always kills the cattle. *Suth* (quarter-ill) attacks young and fat cattle. Always fatal.

The symptoms are,—sudden swelling of some part of the belly, throat, chest, or quarter; on opening the skin of the swollen part, the blood is found congested, black and blue, and there is general congestion of internal organs.

The symptoms of the disease *bhooknee* are,—purging—incessant purging—and sometimes, but rarely, blood is passed. Three, out of four attacked, die. The cattle affected drink and feed out with the other cattle as usual, but they gradually become very weak from purging and die. Symptoms of *bhooknee*. *Post-mortem* appearances.

An animal with *bhooknee* never has any sores in the mouth or eruption on skin. Symptoms. Sores in the mouth and eruption on the skin never appear in *bhooknee*.

Kamalia, 30th August 1870. KAMALIA.

PUNJAB SING and SHERISTA, of Batee and Feroze villages, aged 50 years each, state there are some 800 cattle in our villages, all bred by country bulls and cows of the Punjab breed. The bullocks we use for ploughing and taking water out of the wells. Cows and buffaloes are kept for milk. The best of our cattle we generally sell to *beparees* who come from Hindostan (N.-W. P.) The cattle are kept in sheds in the night, and allowed to graze in fields in the day. If there is a good fall of rain the cattle get their water from tanks, otherwise they are watered from wells. Number of cattle. All home-bred. Uses. Dealers from Hindostan. Housing. Feeding & watering.

In case of scarcity of grass the cattle are driven to other districts to graze. Herding.

If we are in want of cattle we get them from the fairs at Umritsur in Baisak (April) and Kartick (October). The hides we give to moochees, who sell them to other hide dealers. The public road is about one mile from our villages. *Peer* or *matah* has always visited our villages, but *bhooknee* is a new disease; it has never been seen before by us. In *peer* disease the cattle are off feed; have an offensive breath; water from nose and eyes, and purge; but in *bhooknee* the animal takes its food. In *peer* some cattle recover, but none in *bhooknee*. In severe cases of *peer* about 50 per cent. die, but in *bhooknee* all die. The diseases are quite distinct. The cows Umritsur Fair. Hides. *Peer* or *matah* and *bhooknee*. Symptoms contrasted.

KAMALIA.

No remedies for *peer* or *bhooknee*. Both are contagious. *Peer* attacks an animal once. Horns and hoofs. Season of *Peer*. Other diseases. Goats and sheep are subject to *peer*. Source of *peer*.

are more subject to *bhooknee*, and *peer* attacks the buffaloes often. There are no remedies for these diseases. Both are contagious; *peer* attacks the cattle once; if they recover, they never get it again. We throw away the hoofs and horns. *Peer* makes its appearance in Shrabon (July) and Bhador (August).

Bhooknee only came two years ago—commenced in Cheyt (March). *Peer*, *suth*, *bhooknee*, *mokhur*, and *pheepree* are the diseases to which our cattle are subject.

In *mokhur* cattle do not die. The goats and sheep are also subject to *peer*. *Peer* was heard before in the north, and then came to our villages.

The difference between *peer* and *bhooknee* is as follows:—

In *bhooknee* the cattle graze longer, and gradually become thin and weak, and then die. In *peer* they are off feed and die quickly, even without losing condition: in *peer* the cattle pass blood, and in *bhooknee* they do not.

JHUNG.

Baharalla, Jhung, 27th August 1870.

Locality. *Peer* prevailing. Statistics.

Baharalla, 4 miles north of Rajana, in the bar, is a grazing farm consisting of two or three temporary huts. The disease *peer* has been among the cattle of this herd for the last three months. It appeared first of all three months ago, lasted a month or six weeks, then disappeared, and has now re-appeared some five or six days. One man, Shazad, has at present 12 cattle; lost 5 and 2 recovered. Quasim has 18; 5 died and 2 recovered. Nama has 12; 4 died, none recovered. The disease appears in our herd every second or third year; when it is severe half of those attacked die; when mild 25 per cent. die. It has been always present in our herds, even from the time of our forefathers.

Cases.

Four cases of rinderpest were visited by the Commission,—one, a cow, 3 years old, showing all the symptoms of acute rinderpest,—excoriations of gums, aphtha, dysentery, breath offensive, discharge from eyes, nose, and mouth, with excoriations and aphthous deposit on the margins; A second cow, 3 years old, recovering from rinderpest: eruptions all over the body, cuticular desquamation, purging, but no blood; mouth now in a healthy state and breath not offensive. The owner states that she recovered her appetite five days ago.

Two other cases of calves, which had a mild attack and are recovering, were seen.

Second attack. *Peer* considered contagious.

The cattle that have recovered from an attack of *peer* have never a second attack. We do not know whence the disease comes. We consider the disease contagious, and we believe that our cattle mixing with the Ravee cattle got the disease, because we heard that disease was prevailing amongst cattle on the banks of the Ravee. We do not know when the Ravee cattle got the disease first; but the cattle of a place called Bhuggut, in the month of June, mixed at pasture with the Ravee cattle; the last cow that died of our stock died four days ago.

Pheepree (pleuro-pneumonia.)

We have had the disease *pheepree* amongst our herd. It occurs any time of the year. The symptoms are,—coughing; they don't recover, but die; they don't purge; they linger from four to six months, and sometimes for one year; when we open them after death, we find the lungs heavy and full of matter.

Dhukka or *khoorah* (foot and mouth disease.)

We have foot and mouth disease also amongst our herds sometimes; they never die of this disease. We call this disease *dhukka* or *khoorah*. [A case was brought for the inspection of the Commission; both mouth and feet were affected.] We keep the mouth and feet clean with water.

Bhooknee (diarrhœa.)

Bhooknee is another disease. There is continued purging, very watery stools, and the belly swells, and they die in 8 to 15 days; we give no medicine.

Suth (quarter-ill.) Preventive measures. *Suth* attacks the fattest animals. Value of stock.

Suth is another disease. The throat swells; the belly swells; they can't move; they live two or three days and then die; they never recover. The internal parts get black and blue, and rotten. Lungs, liver, and bowels are found black and blue. Underneath the skin also gets black, especially at those parts where the swelling takes place. We have no medicine for it. They die as if they were struck by a musket bullet. When *suth* breaks out, we leave that place and move to another place. *Suth* always attacks the fattest, whether young or old. Cattle which used to be sold for Rs. 20 are now sold for Rs. 15. The reason for this is that grass has become very scarce and people are afraid of disease spreading. Cattle have become more scarce of late years. The reason why they have both decreased in number and price is that they give less milk and are less sought after. We do not sell cows, but sell bullocks to cattle dealers. The cows and bullocks here are of the bar breed, but the buffaloes are partly brought from Hissar and Umritsur. A first rate buffalo costs Rs. 100 here. A good cow Rs. 25 to 30. A first rate bullock Rs. 20. Cattle are often stolen, but more are lost from disease than from theft. We have no cattle poisoning here; we never take our cattle to market for sale. We sell our hides at 8 or 10 annas each to chamars who come for them. We eat the flesh of all dead cattle, but not the diseased parts.

Cows are sold to dealers. Breed of cattle. Buffaloes imported. Price of stock. Cattle stealing. Cattle poisoning. Hides.

Uses of bullocks. Donkeys. *Peer* attacks camels, sheep, and goats.

Peer and *pheepree* and *dhukka* and *suth* come at all times of the year. We keep bullocks for well work and for ploughing, but no pack bullocks. We keep donkeys for carrying purposes. Camels, sheep, and goats get *peer*.

August 30th 1870. JHUNG.

FATHEH SHAHA, a Lumbardar of Thattah Momin Shah of Chinote Tehseel, age 60, states,—I live at Thattah Momin Shah, which is about 1,700 beeghas in extent. This village is 13 koss east and north of Jhung. The diseases among cattle which I have seen in my village are,—1*st, peer* or *matah*, of which the symptoms are,—loss of appetite, and thirst for a few days, until strength fails; heat of body, hair erect, eyes bloodshot, red, and watering, mouth and nose watering, purging excessive and watery, sets in about the third or fourth day, and the animal dies about the eighth day. With the purging blood is generally mixed, but mucus has not been observed. In some cases eruptions appear on the skin. In severe attacks about 75 per cent. of the animals die, while in slight attacks about 50 to 30 per cent. only die. This disease has been known from time immemorial in this part of the country, and breaks out every third, fourth, or fifth year. There is no remedy for this disease. It is highly infectious. It is the custom in this part of the country to separate sick from healthy cattle to avoid contagion. In my village last year there were about 100 buffaloes, 400 cows, and 500 goats. About 40 buffaloes died last year of *peer*, and about 100 cows. This disease attacks all animals that chew the cud, but is not to the same extent fatal among sheep and goats. Animals only get *peer* or *matah* once in their lives.

Locality.
Diseases
Peer or *matah* (rinderpest).
Symptoms.
Eruptions.
Mortality.
History.
Known from time immemorial.
Breaks out every 3rd, 4th, or 5th year.
No remedy.
It is highly infectious.
Segregation is practised.
Statistics.
Other animals.
Second attack.

2*nd. Bhooknee.*—This disease is simply excessive purging. The appetite continues; no water comes from the nose, eyes, and mouth; no eruption on the skin. There is no blood, but extremely thin green purging, thinner than in *peer*. Sometimes an animal dies in 10 or 12 days, but occasionally lingers for two or three months. This disease was not known in this district before three years ago; it is now thought to be contagious; but people hitherto being ignorant of this have allowed their cattle to mix together.

Bhooknee (diarrhœa.)
Not known before 1867.
Is thought to be contagious.

3*rd. Pheepree.*—The animal breathes with noise and difficulty, coughs, retains its appetite, but the body dries up. The animal sometimes lingers on for a year, and sometimes dies in five or six months. This disease is comparatively rare, but almost invariably fatal to those animals which are attacked.

Pheepree (pleuro-pneumonia).
Is comparatively rare.

4*th. Suth.*—A choking of the throat and a collection of the blood in a particular part of the body, sometimes on the throat and neck, sometimes inside the animal, sometimes on the hind quarters, sometimes on the shoulders. The body swells where the blood collects. This disease attacks animals in the best condition, and proves fatal in from two to twelve hours. I have never seen an animal recover from this disease, nor heard of such a thing. This is not, I believe, an infectious disease, and though very deadly, is not of common occurrence.

Suth (quarter-ill).

5*th.* There is another disease which arises from drinking bad water or eating a grass called *mûrrak*. In this disease the animal's stomach swells, and unless it is relieved by purging, the animal dies in a day and a half. This disease is not common. To bring on purging we are in the habit of giving molasses and ghee. This disease is sometimes called *aphra*, from the belly becoming swollen *(pet aphra jata hai)*.

Mûrrak.

6*th.* Cattle also die sometimes suddenly from eating the leaves of the *jowar* plant when they are becoming dry. The green leaves of the plant cause no bad effects, but when the plant becomes dry, cattle are carefully kept from it, and the field in which the plant grows is generally fenced round to prevent cattle getting at it. This disease is very rapid, but is curable, if taken care of in time. Warm butter-milk and the seeds of the small melon (called *kalka*) ground down should be given at once.

Cattle also die from eating *jowar* plant.

7*th.* Then there is *dhukka*, but animals do not die of this disease. The sore feet and mouth are washed with warm water, but no other curative measures are resorted to; water flows from the mouth of the animal, and the mouth becomes raw inside, but there is no water from eyes and nose, and no purging.

Dhukka (foot and mouth disease) not fatal.

Evidence of ARJMAND, *Tehseeldar of Jhung Tehseel.* Arjmand.

I have been here for two months. *Peer* has come into 10 or 12 villages of the Jhung Tehseel this year, but *bhooknee* is not now in this tehseel, nor has it been here. As we know, *peer*, like small-pox among men, has been known for generations, but *bhooknee* has not been known for more than three years in this district. The description given by the last witness of *peer* in my presence is correct; but his description of *bhooknee* does not coincide with my own experience in all particulars. I was in the Hafizabad Tehseel of the District of Gujranwalla when the disease *bhooknee* broke out last year, and I calculate that two-fifths of the cattle in that tehseel died of *bhooknee* alone. I was in the tehseel when *bhooknee* broke out. It did not appear in all villages, but carried off about three-fifths of the cattle in those villages in which it did appear. The symptoms of *bhooknee* were :—

Peer (rinderpest) in 10 or 12 villages.
Bhooknee has not been in the tehseel.
Peer has been known for generations.
Bhooknee only known for three years.
Bhooknee in the Hafizabad Tehseel in 1869.
Mortality.

The first sign of illness was that the animal appeared troubled, and separated from the herd and lied down in a shady spot. Its body was warm. Its appetite remained nearly as good as usual, but in three or four days the animal's belly began to swell, and it got hoven, and green and very watery fluid stools were passed copiously. Appetite was somewhat impaired, but not gone. In very severe cases the animal died in eight or ten days, but generally lingered

Symptoms.

JHUNG. Arjmand. Season of attack. longer, and occasionally for three or four months. The purging was not accompanied by blood or mucus. The animal remained quiet and still, but its lungs did not appear affected. Its breathing was regular. This disease appeared first in the end of May and continued till August.

Want of pasture. Causes of disease. At the time the disease appeared there was a deficiency of pasture, and the cattle were in very poor condition, and weak at the time. Some people said that when the grass got dry and burnt up, small insects (*sivî*) came over it, and that from eating these the animals got *bhooknee*. This disease was found to be highly contagious, but this was not known to the people at first, though subsequently they separated their healthy cattle from the sick as soon as they showed signs of illness. At first no remedy was known, but subsequently it was found that *maindi* water (decoction of privet) administered in the first stages of the disease very often saved the life of the animal. This disease appeared chiefly in the jungle in the middle of the "bar," but very little on the banks of rivers. I had one or two animals cut open after death. The lungs I found lighter than usual, bloodless, and of a pale white color, instead of being pink, as is usual. The mouth of the first stomach had got enlarged, and the outside of the heart instead of being red, had spots of black sprinkled over it. The smaller entrails were twisted and distorted. There was copious rain in the bar in August, and then in a few days the disease ceased wherever it had broken out. This disease was much more local than *peer*, and extended only to the Hafizabad, Chinote, Gujranwalla, Googaira, and Sirkpoor tehseels (the latter in the Lahore district.) This disease was thought by many to be new, and to have appeared for the first time last year, but some people remember to have seen it about sixty years ago. This disease chiefly attacked cows, while *peer* is more fatal to buffaloes than to cows. There is no *bhooknee* this year anywhere in this neighbourhood or in Gujranwalla, as far as I know, but *peer* is more or less present every year.

Bhooknee considered contagious.

Treatment.

Post-mortem appearances.

A copious fall of rain occurred and *bhooknee* ceased.

Rainfall. Soil. The land of the Jhung and Gujranwalla districts is very similar. Very little rain falls. The soil is sandy on the banks of rivers, and there are *kunkur* (gravel) beds in many parts.

Breed of cattle. The cows in this neighbourhood are of the bar breed, so also are the bulls, but those in the bar are larger and finer than those near the banks of the river. The reverse is the case with the buffaloes, which are finer on the river bank, and these also are natives to the district.

Price of stock now. The average prices of cattle now are as follows:—

Cows from	...	...	...	...	Rs.	20	to 25
Buffaloes from	...	...	...	...	„	40	to 50
Bullocks „	...	...	...	...	„	25	to 27
Sheep „	...	...	...	...	„	1-8	to 2
Goats „	...	...	...	...	„	2-8	to 3
Pack Camels from		...	...	...	„	60	to 70
Riding Camels from		...	...	...	„	80	to 100

and ten years ago. The prices of the same kind of cattle 10 years ago were:—

Cows from	...	...	...	...	Rs.	15	to 20
Buffaloes from	...	...	...	...	„	30	to 45
Bullocks „	...	...	...	...	„	18	to 20
Goats „	...	...	...	...	„	1	to 1-8
Sheep „	...	...	...	...	„	1	
Pack Camels from		...	...	...	„	40	to 50
Riding Camels from		...	...	...	„	100	to 120

Cause of increase of price. Export. The reason why the price of riding camels has decreased is, that they are now bred in the districts, while formerly they used to come from Bikaneer. All the other animals have risen in price because the export has increased. Ghee, bullocks, and male buffaloes are exported in large quantities, but the females are not sold just at present; from disease, the price of cattle has decreased somewhat. The cows and female buffaloes are kept for milk, and are not so numerous as bullocks. Bullocks are almost entirely used for ploughing and well work. Pack or cart bullocks are little used. Those who have many cattle keep them out grazing, but those who have few keep them at home. In the cold weather, even those in the jungle are housed at night in sheds made of the branches of trees.

Uses of cattle.

Housed at night.

Names of grasses. The kinds of grass are—

1, *chémrî*; 2, *dûbb*; 3, *dhâman*; 4, *kheo*; 5, *sain*; 6, *palwân*; 7, *koora*; 8, *sambh*; 9, *murruk*; and 10, *dila*—poisonous.

Watering. *Peer* in 1840. The cattle are watered from wells and pits where rain water is caught. There was a great outbreak of *peer* 30 years ago.

Seasons of plagues. Suppression of milk. Plagues come irrespectively of the season of the year; *peer* attacks young cattle chiefly; milk stops in *peer* and *bhooknee*, but continues in *pheepree* nearly till the last.

JHUNG.

The hides of dead animals are taken by chumars. Cattle are sometimes poisoned in this district out of enmity, and by chumars for their flesh, but never for their skins. Cattle so poisoned are killed chiefly by insertion of poisoned needles under the skin. Cattle skins are largely exported. They vary in price from 12 annas for cows, and 1 anna for sheep, to Rupee 1-8 for buffaloes. *Bhooknee* ceases when rain falls in any quantity, but *pheepree* and *peer* are equally prevalent all through the year. However, the mortality is greater from *peer* in hot weather.

Arjmand.
Hides.
Cattle poisoning.

RAWULPINDEE DIVISION.

RAWULPINDEE.

From J. C. PLOWDEN, Esq., *Asst. Commr., Murree, to the President, Cattle Plague Commission, Delhi,*—(*No.* 153, *dated* 10*th August* 1870).

MURREE.
J. C. Plowden, Esq.

In reply to your No. 108, dated 18th July 1870, I have the honor to report that the following diseases are known in this sub-district amongst the sheep, goats, and horned cattle, and have been accompanied with the symptoms hereafter detailed.

Amongst the two former—

1.—*Budi ;* 2.—*tandi ;* 3.—*bitan ;* and 4.—*bola.*

And amongst the latter mentioned—

1.—*Zahmat ;* 2.—*garri ;* 3.—*mokhur ;* 4.—*tákún ;* 5.—*pharkí ;* 6.—*balún ;* 7.—*palchi ;* and 8.—*kar.*

LAHORE.
T. E. B. Brown, Esq.

* * * * * * * *

[It is difficult to arrive at any correct opinion as to the nature of most of the diseases named from "the symptoms detailed," but probably *zahmat* is the local name for rinderpest, and *mokhur* is that of foot and mouth disease.—C. P. C.]

From T. E. B. BROWN, Esq., M. D., *Principal, Lahore Medical School, to the President, Cattle Plague Commission,*—(*No.* 75, *dated* 25*th March* 1871).

In answer to your office letter No. 35, dated 1st March, I have the honor to state that the following are, I believe, the names of the grasses in question, and the mention which is made of them in Dr. Stewart's Punjab Plants :—

1*st.*—*Murruk* (*sarpus maritimus*),—a sedge common in marshes, and when fresh is fair fodder, but soon gets too dry.

2*nd.*—*Chimri* (*eleusina flagellifera*),—abundant in many of the most arid parts of the Punjab plains, specially towards the west. In some places it is stated to be a favorite with cattle.

3*rd.*—*Dhamun* (*pennisetum cenchroides*),—common in many parts of the Punjab plains, and reckoned one of the best of all the wild grasses for forage both for cows and horses. It would appear from Edgeworth that near Mooltan its seeds are swept from the ground to be used as human food.

4*th.*—*Kheo* (*saccharum spontaneum*),—a small species common on islands throughout the Punjab plains. It is given as fodder to buffaloes.

5*th.*—*Palwan* (*andropogon annulatus*),—abundant in many parts of the Punjab plains. It is considered excellent fodder for bullocks, &c., and for horses when green.

6*th.*—*Koora* (*saccharum*, sp. ?)

7*th.*—*Lamleh* (*eragrostes*),—several species are included under this name and are considered good pasture grasses ; one at least is used as a pot herb.

8*th.*—*Dila* (*cyperus, tuberosus*),—but *dila* appears to be a generic name for the *cyperaceæ*, the roots of several of which are eaten by pigs, and their stems, &c., browsed by cattle.

THE PROVINCE OF OUDH,

COMPRISING THE DIVISIONS OF HURDUI, KHEREE, SEETAPORE, FYZABAD, BARAICH, ROY BAREILLY, PERTABGHUR, SULTANPORE, OONAO, AND LUCKNOW.

Index of Records.

[*N. B.*—Those in Italics are not printed.]

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
	Historical Sketch ...	...	... ...	Page 505.
Hurdui.	*J. R. Reid, Esq., Officiating Deputy Commissioner, Hurdui.*	1826	*6th November* 1867	*Selections, Government of India, No. 69, p. 194. Reports outbreak of cattle disease.*
	A. G. Walker, Esq., Assistant Commissioner, Hurdui	1866	*14th ditto* ...	*Ditto ditto, p. 195. Further report on the same subject.*
	Dr. G. D. McReddie, Civil Surgeon, Hurdui.	...	*13th ditto* ...	*Ditto ditto, p. 196. Memorandum regarding the symptoms, &c, of this disease.*
	Major J. Reid, Officiating Commissioner, Seetapore Division.	4280	*25th ditto* ...	*Ditto ditto, p. 198. Forwards a further demi-official report from Hurdui regarding the disease.*
	J. T. McAndrew, Esq., Officiating Secretary, Chief Commissioner, Oudh.	115 4215	*2nd December* 1867	*Ditto ditto, p. 199. Circular impressing the duty of reporting epidemics and epizootics, and the propriety of acting on the belief of their contagiousness.*
	Deputy Commissioner of Hurdui.	2226	22nd September 1869	Reports prevalence of cattle disease in the Sundeela Tehsil, p. 509.
	Ditto ditto ...	2322	2nd October 1869	Reports decline of cattle disease, p. 509.
	Ditto ditto ...	147	25th January 1870	Form No. 1, regarding the outbreak of 1867, p. 509.
	Ditto ditto ...	3069	6th October 1870	Form No. 1, regarding the outbreak of August 1870, p. 509.
Kheree.	*W. Glynn, Esq., Deputy Commissioner, Kheree.*	2801	*22nd November* 1867	*Selections, Government of India, No. 69, p. 199. States that no cattle disease has been found to exist in his district.*
	Deputy Commissioner of Kheree.	Returns in Form No. 1	From 19th July 1870 to 2nd January 1871.	Particulars regarding prevalence of cattle disease in 1868, 1869, and 1870, p. 511.

Index of Records.

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Kheree, - *contd.*	Mr. A. Foy, Fazelnugger, Kheree.	Form No. 4	6th May 1870 ...	A statement regarding cattle and their diseases, p. 512.
	C. N. Carnegy, Sahibgunge, Kheree.	Ditto	25th ditto ...	Ditto ditto, p. 513.
Seetapore.	Deputy Commissioner, Seetapore.	Returns in Form No. 1	19th July to 1st November 1870.	Seven returns showing the prevalence of cattle disease in the district, p. 515.
Fyzabad.	*Deputy Commissioner, Fyzabad.*	794	*5th March* 1870	*Reports that no disease exists.*
	Ditto ditto ..	*Form No.* 1	*3rd February* 1870	*Regarding disease in* 1867.
	Ditto ditto ...	*Ditto*	*19th July, 8th August and 30th November* 1870.	*Reporting outbreaks in Soonkheree, &c.*
Baraich.	H. J. Sparks, Esq., Deputy Commissioner of Baraich.	2229	18th October 1870	Reports outbreak of cattle disease, p. 516.
	Ditto ditto ...	2296	31st December 1870	Further report, with returns in Form No. 1, relating to five villages, p. 516.
	Ditto ditto ...	2501	2nd ditto ..	States that there is no reason to suppose that the cattle have been poisoned, p. 516.
	W. B. Harington, Esq., Secretary to the Chief Commissioner, Oudh.	263	13th January 1871	Gives the derivation of the words *khang* and *guturooa*, p. 516.
Roy Bareilly.	*Deputy Commissioner of Roy Bareilly.*	*Form No.* 1	*14th April* 1870 ..	*Gives statistics of cattle disease during the ten years* 1859—1869, *and names the prevalent diseases.*
Pertabghur.	C. R. Crommelin, Esq., Officiating Deputy Commissioner, Pertabghur.	1393	10th July 1869 ..	Report on cattle disease in the district, p. 516.
	Ditto ditto ...	1829	1st September 1869	Further report on the same outbreak, p. 517.
	Deputy Commissioner, Pertabghur.	Form No. 1	From 15th February 1870 to 23rd September 1870.	Seven returns showing the prevalence of murrain in the district, p. 518.
Sultanpore.	Deputy Commissioner, Sultanpore.	Ditto	From 7th March 1870 to 12th October 1870.	Forty-five returns showing the prevalence of cattle disease, p. 519.
Oonao.	Extract from General Remarks on Oonao Crime Return.	...	June 1869 ..	Reports the prevalence of cattle disease in the district, p. 521.
	Deputy Commissioner, Oonao.	Form No. 1	From 23rd February 1870 to 21st November 1870.	Twenty-six returns showing the prevalence of cattle murrain, p. 521.

Divisions.	From whom received.	Number.	Date.	Reference and Purport.
Lucknow.	Quinton, Esq., Deputy Commissioner, Lucknow.	4285	1st September 1869	Reports prevalence of disease in the Mulliabad Tehsil, p. 523.
	Ditto ditto ...	4553	15th ditto ...	Further report of same outbreak, p. 523.
	Villagers of Bijnour ...	...	8th May 1870 ...	Evidence recorded by the Cattle Plague Commission. ..... p. 524.
	Ditto Paharpoor ...	...	10th ditto ...	..... p. 524.
	Evidence of Muckood ...	...	10th ditto ...	..... p. 526.
	Ditto Pusaia Aheer...	...	Ditto ...	..... p. 526.
	Ditto Goolab Aheer...	...	Ditto ...	..... p. 527.
	Ditto Lochun and Punchum.	...	Ditto ...	..... p. 527.
	Ditto Rewate Aheer	...	Ditto ...	..... p. 527.
	Ditto Golaub Thakoor	...	Ditto ...	..... p. 527.
	Villagers of Aroonea ...	...	11th ditto ...	..... p. 528.
	Deputy Commissioner of Lucknow.	Form No. 1	14th January 1870 to 19th December 1870.	Forty-two returns showing the prevalence of cattle murrain in the district, p. 529.

HISTORICAL SKETCH.

The Province of Oudh furnishes evidence, as clear and ample as that already considered under the other Provinces of the Bengal Presidency, of the frequent and widespread prevalence of murrains among cattle. Early records are, however, wanting, and not until very recently has the subject become matter of general attention or careful inquiry. This attention and inquiry have revealed so much sickness and death among cattle in nearly all the districts of the Province, that it cannot be believed that the revelations of 1870 disclose an exceptional prevalence or severity. This view is further supported by the oral evidence obtained by the Commission in the neighbourhood of Lucknow in May 1870. The villagers were unanimous as to the periodical prevalence of murrain, and several distinct instances of plague—in 1840, 1850, and 1859—were mentioned. Here, as elsewhere, there are a great variety of cattle diseases, known under different vernacular names; and it is difficult from the confused and meagre description to identify them; but rinderpest and foot and mouth disease stand out prominently among them, the former known by the names *pokna*, *vaba*, *debee*, *haiza*, *bade*, *raze*, *murree*, *burree*, &c., and the latter called *khoorah*, *chupka*, *khang*, &c. Having premised these general remarks, the information obtained from each Division will now be systematically summarised. HISTORICAL SKETCH.

SEETAPORE DIVISION.

This Division forms the north-western part of the Province, and comprises the Districts of *Hurdui*, *Seetapore*, and *Kheree*.

1861. It appears from information supplied by Messrs. Carnegy and Foy, who hold land in the northern part of the District of Kheree, that murrains are frequently prevalent in the breeding tracts of the Nepal Terai. Mr. Carnegy states that in 1861 a plague among cattle prevailed, and, writing in 1870, he says that cattle disease existed annually during the past eight years in the neighbourhood of his estate. Cattle are here herded in the same way as in the Darjeeling and Kumaon Terai, and murrain is here also perennially present, being conveyed into the plains when the cattle return, and finding its way occasionally into the hills of Nepal. Mr. Carnegy's interesting statement links together the information obtained regarding the jungle tract or Terai east and west (*vide* page 253).

1867. In November 1867 "a fatal cattle disease" was reported to exist in the District of Hurdui. "Hundreds of cattle" were dying in the villages of the district of a murrain characterized by bloody purging and in some cases maggot-infested mouth. Efforts were made to segregate, and cattle were ordered *not to be impounded*, in case disease might be spread by this means. The symptoms of this murrain were studied by the Civil Surgeon, Dr. McReddie; they are those usually assigned to rinderpest. He notes that the mortality was about 50 per cent. The statistics of this outbreak are entirely wanting, but the Deputy Commissioner notes that 50 and 100 cattle had died in two villages where particular inquiry had been made, and he was struck with the number of skeletons of cattle lying near them.

This murrain was considered to be infectious, and measures were adopted, apparently with success, to segregate cattle and prevent the spread of the disease to neighbouring districts. Inquiries were made about this time in the adjoining District of Kheree, but no disease was found to exist. The Hurdui disease seems to have died out in December; it was called *murree*,—an indefinite term applied to any disease with much mortality.

Although no official record of disease in the Kheree District in 1867 exists, it appears from Mr. Carnegy's statement that murrain did prevail in the northern part of the district from April to October.

HISTORICAL SKETCH.

It appears from returns prepared in 1870 that cattle diseases prevailed in the District of Kheree both in 1868 and 1869. It is evident from the figures given with regard to 23 villages that a considerable mortality took place, and from the symptoms assigned to the different diseases named, though these are by no means clearly distinguished, it is evident that both rinderpest and foot and mouth disease prevailed, swelled throat being also mentioned under the term *guturooa*. Disease appears also to have prevailed in the District of Seetapore during the year 1869, the returns prepared in July 1870 assigning a considerable mortality to that year, and mentioning also outbreaks in the Baree Tehseel in the years 1858, 1859, 1860, 1861, and 1862.

1868.

Cattle disease prevailed in the Sundeela Tehseel of the District of Hurdui in September 1869, having spread thither from the Mulliabad Tehseel of the Lucknow District across the Goomtee river. The disease abated in October.

In 1870 murrain seems to have prevailed in all the districts of the Division. It broke out in Kheree and Seetapore in April, and periodical returns were received from these districts from July to December, showing that considerable losses of stock occurred. These returns are given in a summary form in the sequel. In Hurdui disease broke out in August 1870. Two forms of disease are described by Dr. McReddie,—*burree*, under which name he describes the symptoms of rinderpest, and *khoorah*, or foot and mouth disease. Fifty-two cattle had died on the 30th of September of 153 attacked in a stock of 775, or 7 per cent. of stock and 34 per cent. of attacked.

1870.

FYZABAD DIVISION.

This Division forms the north-eastern part of the Province and comprises the Districts of *Fyzabad*, *Baraich*, and *Gonda*.

In May 1867 cattle disease—called by the natives *gulsooa*—prevailed throughout the Fyzabad District. The symptoms assigned to it are those of rinderpest; the disease was considered infectious, and measures were taken to segregate and isolate the sick. These measures are said to have stamped out the disease. No record of disease exists with regard to the other districts in 1867, nor the Division in 1868 and 1869.

1867.

In February 1870 *poknah* broke out in Soonkheree, in Fyzabad, and in August and November in two other localities in the same district; the losses were however small. The figures given are as follows:—

1870.

Place.	Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.
Soonkheree	106	29	17	12	...
Goordaspoor	60	16	4	...	12
Naseerpoor	135	116	100	4	12
TOTAL	301	161	121	16	24

This gives a mortality of 40 per cent. of stock and 75 per cent. of attacked. The symptoms assigned are those usually given—bloody purging, &c.

In October of this year, the widespread prevalence of cattle murrain was reported from Baraich. The diseases prevailing were called *khang* and *guturooa*,—hoof and throat disease. The symptoms assigned to the latter were so anomalous

and suspicious that an inquiry was made as to whether cattle poisoning may not have been the cause of the deaths assigned to *guturooa*. This was, however, answered in the negative. The figures given in the reports received are as follows :—

Place.	Stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	REMARKS.
Pyagpore and Puchderorie ...	216	181	28	141	12	*Khang.*
Chitramiror	254	112	54	29	29	*Khang* and *guturooa*
Gilawlie	201	31	23	5	3	*Ditto ditto.*
Matabar	...	131	55	45	31	*Ditto ditto.*
Siseyaralwan	455	194	79	28	87	*Khang.*
TOTAL ...	1,126	649	239	248	162	

This gives a death-rate from *khang* of 15 per cent. of stock (taking that of the blank village at 200) and 36 per cent. of attacked ; 32 cases are put down to *guturooa*—all fatal.

The Deputy Commissioner states in a letter printed below that 1,073 cattle died among 1,343 attacked (79 per cent.) in 47 villages of the Korasul Tehseel, and 4,176 of 9,838 (42 per cent.) in 219 villages of the Nanpara Tehseel. Though the foregoing information is subject to doubt as regards the type of the disease which prevailed, it is valuable as showing that great mortality took place in the district from murrain.

No information has been received from the District of Gonda.

ROY BAREILLY DIVISION.

This Division forms the south-eastern part of the Province and comprises the Districts of *Roy Bareilly*, *Pertabgurh*, and *Sultanpore*.

1859. A return was received from Roy Bareilly, dated the 14th April 1870, in which 12 diseases of cattle are named and the statistics of 10 years given. The cattle diseases named are marginally put down. Rinderpest appears to be known as *haiza*, and foot and mouth disease as *khoorah ;* for the rest, it is impossible to identify them accurately. The figures given are as follows :—In a stock of 205,994, 25,095 were attacked (12 per cent.), and 18,934 died (9 per cent. of stock and 73 per cent. of attacked). Disease is said to have prevailed from June to September in each year.

1. *Khoorah*—hoof disease.
2. *Ghoorka*—throat swelling.
3. *Hacoo*—ditto.
4. *Bitharoo*—swelling of the jaws.
5. *Kharist*—itch.
6. *Bairuck*—swelling of stomach.
7. *Chahan*—bleeding of the nose.
8. *Haiza*—cholera.
9. *Medookee*—sores on the lip.
10. *Baghi*—disease of the bowels.
11. *Tulligana*—worms in the stomach.

1869. No specific record of disease exists until July 1869, when a great mortality was reported from "cholera and *chechuck*" among cattle in the Pertabghur District; foot and mouth disease seems also to have prevailed. The mortality for the district is stated at 5,735 head of cattle. The principal disease was no doubt rinderpest.

In the District of Sultanpore also, *hoolka* or cholera broke out in March 1859 in the Moosafir Khana Pergunnah. The statistics of one village only are given by the Deputy Commissioner in a return dated 7th March 1870. In a stock of 243, 56 had been attacked (23 per cent.) and 38 had died (15 per cent. of stock and 68 per cent. of attacked).

HISTORICAL SKETCH.

During the latter half of the year 1870 murrain prevailed extensively in both the two last-mentioned districts. The particulars forwarded from time to time are given in a summary form below. Cholera—no doubt rinderpest—and foot and mouth disease are the two principal causes of sickness and mortality mentioned.

1870.

LUCKNOW DIVISION.

This Division forms the south-western portion of the Province and comprises the Districts of *Lucknow*, *Oonao*, and *Burrabankee* or *Durriabad*.

The first official report of cattle disease in this Division is from Oonao in June 1869. The mortality was very great and general; 83 per cent. of the cattle attacked are said to have died. The disease was called *zahurbad*, and swelling of the glands of the throat is the only symptom mentioned. The oral evidence obtained by the Commission showed that cattle disease prevailed in this Division long anterior to 1869. On the 1st of September the Deputy Commissioner of Lucknow reports that cattle disease had appeared in the Mulliabad Tehseel of that district; the symptoms described point unmistakably to rinderpest. Isolation and burial of carcasses were enjoined. On the 15th of the same month a further report was submitted, showing that disease still prevailed in Pergunnahs Mulliabad and Mahonah; 341 cattle had died out of 770 attacked, or 44·3. The disease is said to have died out in November.

1869.

In the districts both of Oonao and Lucknow cattle plague continued to prevail throughout the year 1870. In the former, the early reports concerned the Suffeepoor Pergunnah, but during the last half of the year disease seemed to have spread all over the district. The murrain was called *haiza*—cholera—because purging was the most prominent symptom, but there can be no doubt that rinderpest was the main cause of sickness and mortality. In Lucknow the early reports concerned the Pergunnah of Bijnour. In the beginning of May this district was visited by the Commission, and rinderpest was found prevailing in and around Banthra, some 16 miles from the city near the road to Cawnpore.

1870.

Reports continued to come from different parts of this district up to December 1870, and it is evident from these that rinderpest, called cholera, dysentery or looseness, was spread widely over the district and caused very material damage. No information has been received from the District of Barabunkee.

DISTRICT OF HURDUI.

From the Deputy Commissioner of Hurdui, to the Commissioner, Seetapore Division,—(No. 2226, dated the 22nd September 1869).

In reply to your docket No. 5073, dated 11th current, I have the honor to state that the Tehseeldar of Sundeela reports he has visited several villages in his tehseel, and finds that cattle disease has crept in evidently from the Mulliabad Tehseel of the Lucknow District in the following villages north of Sundeela, and running towards the river Goomtee, *viz.*, Kimowra, Ant-Surgowhan, Lalla Maow Muvaie, Madaree Khera, Sheopooree, Narainpore, Punduriah, Somickpore.

2. The disease has greatly abated, however, and it is hoped is daily on the decrease.

3. Agreeably to your instructions, I have perused the file of former correspondence on this subject, and also the Chief Commissioner's Circular No. 115-4215 of 2nd December 1867, and the orders contained therein have been duly issued to the Tehseeldar of Sundeela.

4. I have requested the Tehseeldar to make further inquiries, and will again report on this subject by 5th October 1869.

Memorandum by CAPTAIN J. N. B. HEWETT, *Deputy Commissioner of Hurdui,—(No.* 2322, *dated the 2nd October* 1869). Captain J. N. B. Hewett.

In continuation of this office No. 2226, dated 22nd September, the undersigned begs to state that the Tehseeldar of Sundeela now reports the cattle disease to have greatly abated in all the villages bordering on the Goomtee river, except in Mouzah Mugrah.

The Tehseeldar has been directed to make a further report in ten days, and the undersigned will again communicate on this subject to Commissioner on the 15th instant.

Information regarding cattle murrain in the District of Hurdui, furnished by DR. MCREDDIE, *Civil Surgeon,—dated 25th January* 1870. Dr. McReddie.

The disease is popularly called in the vernacular *murree,*—an indefinite term applied to any disease accompanied with much mortality; it prevailed in the District of Hurdui during the year 1867.

The statistics of the outbreak cannot now be given.

The disease is infectious; the result of observation on this point is that among cattle grazing together, the diseased do not impart the infection to the healthy, but among diseased and healthy cattle *tied* and *fed together,* the latter take the disease: thus, a house which has had one death amongst its cattle, is certain of having more die, or at least take the disease. Infectiousness.

The origin of the disease is uncertain. It is said by some to be due to the *new grass* which springs up after the rains, and on which cattle feed; but in other parts of Oudh the epidemic has occurred in the early part of the year before the setting in of the rains. It may be that a combination of causes, such as bad and insufficient feeding, the total want or insufficiency of salt, and, above all, some potent influence, either imported by diseased cattle or by atmospheric agency, accounts for the disease.

The symptoms observed were as follows:—The coat loses its smoothness and it becomes corrugated and *hangy,*—the latter aspect due to emaciation and loss of flesh; no eruptions were noticed in the epidemic of 1867; eyes and mouth watered; the body was of higher temperature than natural; shivering occurred in the beginning of the attack; diarrhœa was seen, with stools of dark-brownish color, with blood in small quantities passed distinct from the fæces, and subsequent to the latter, stools passed frequently, but apparently without pain; urinary excretion not examined; swelling of the throat is said to occur as one of the symptoms; it has not, however, been observed by me. Symptoms.

The duration of the disease was 3 to 15 days; recoveries were frequent, if the symptoms were protracted beyond a fortnight. The isolation of diseased cattle was the measure recommended and resorted to, apparently with the result of checking the epidemic. Opium, alum, chalk, and spirits (country) were the medical agents recommended.

Statement, dated 30th September 1870.

Khoorah and *burree* broke out in the town of Hurdui about 20th August 1870. From the outbreak to 27th September 1870, in a stock of about 775, 153 cattle have been attacked, 52 have died, and 101 have recovered or are in course of recovery. Statistics.

HURDUI.

Dr. McReddie.
Infectiousness.
Origin.
Symptoms.

The natives do not believe it (*burree*) to be infectious, but it undoubtedly is communicable by contact from one animal to another. *Burree* is probably due to cattle grazing on grass which has lately been submerged. The symptoms are,—rough-looking coat; there are no eruptions on body; ulcers form in feet, but this is a separate disease from the one which causes large mortality. *Burree* is a form of dysentery. Eyes and mouth water in some cases; the body is hot from fever—cold only in last stages; cough was not observed; labored breathing present only before death. Swelling of the throat occurs only in exceptional cases, and is a very fatal sign; urine scanty and high-colored; fæcal evacuations liquid, bloody, dark-brown in color, passed frequently.

Two diseases which I believe are quite distinct from each other have been observed,—first, *khoorah*, so called by people here, and named so also in Dr. McLeod's paper, is ulceration of the feet and curable, proving fatal only secondarily.

The average duration of attack is five to fifteen days. Recoveries are frequent if cattle survive a fortnight. In severe cases the average period from commencement to death is five days.

Treatment.

For *burree*, powders of a combination of alum, chalk, and opium have been given, and with considerable success. In *khoorah*, carbolic acid diluted with oil (1 to 4) acts like a charm; for general use alum has been recommended.

DISTRICT OF KHEREE.

Summary of Returns received from the District of Kheree.

Pergunnah, Tehseel, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Kheree ...	15 villages ...	Raze	From Jan. 1868 to Dec. 1869.	July 19, 1870 ...	3,045	595	303	292	...	The symptoms assigned to the diseases named in column 3 are confused, and imperfect; but *haiza*, *bhade*, and *raze* appear to indicate rinderpest, *khoorah* and *chupka* foot and mouth disease, and *guturooa* swelled throat. Taking them all together, the mortality is 20·7 per cent. of stock and 68·7 per cent. of attacked; 301 per cent. of stock were attacked.
	4 villages ...	Bhade ...	June, August, & October.	Ditto ...	5,000	1,124	923	201	...	
	5 villages ...		April 15, 17, 18 and 20, 1870.	Sept. 13, 1870 ...	1,400	267	159	108	...	
	3 villages ...		September 1870	Nov. 14, 1870 ...	710	294	180	99	15	
	2 villages ...		August 1870 ...	Jan. 2, 1870 ...	1,045	626	609	17	...	
	Gillinpoorwa ...		Oct. 1, 1870 ...	Oct. 29, 1870 ...	50	19	14	3	2	
	Oodraina ...		August 1870 ...	Nov. 1, 1870 ...	200	20	20	...	...	
	4 villages ...	Guturooa ...	Feb., Sept., Oct., and June.	July 19, 1870 ...	1,455	48	42	6	...	
	Bahowra ...	Haiza ...	August 1870 ...	Nov. 3, 1870 ...	400	100	40	50	10	
	Mohumdee ...	Khoora ...	Ditto ...	Nov. 12, 1870 ...	15	1	1	...	...	
	3 villages ...		Sept. 22, 1870 ...	Ditto ...	37	37	...	15	22	
	4 villages ...									
	a Bujooa ...	Raze ...	May, June, and July.	Sept. 15, 1870	2,850	125	50	25	50	
	b Sainteesea ...	Ghuturooa ...			...	10	8	1	1	
	c Mohumafad ...	Ghoora ...			...	220	5	60	155	
	d Grant Heerapur ..									
	99 villages ...	Ghoora, Chupka...	July 20 ...							
		Haiza and Raze...	April to September 1870.	Dec. 3, 1870 ...	29,233	10,545	7,455	2,485	605	
Gola ...	Kureempore ...	Raze ...	Aug. 10, 1870 ...	Sept. 15, 1870 ...	300	30	15	...	15	
	14 villages ...		August and September 1870.	Nov. 1, 1870 ...	6,652	1,871	1,152	570	149	
	13 villages ...		Ditto ...	Ditto ...	3,825	1,002	672	200	130	
Bhoor	Moonda ...	Chupka ...	Sept. 15, 1870 ...	Ditto ...	100	73	46	7	20	
				Total ...	56,323	17,007	11,694	4,139	1,174	

KHEREE. *Information regarding cattle murrain in the District of Kheree by* MR. A. FOY,—*dated 6th*
Mr. A. Foy. *May* 1870.

Locality. The following information applies to Fazelnuggur, Kheree, 100 miles north of Lucknow and 10 miles south of the Chowkar river: the area of this estate is 4,000 acres.

The land is known as "gauger" land, alluvial and yellow clay; subsoil resting on a bed of sand more than 20 feet deep.

Number of cattle. There are some 80,000 head of cattle in the country between the Sajoo river and the Cowriala river.

Breeds. The principal breeds are,—*dhowrera, singhai, paoner,* and *parair.* In those places there are large herds of cattle where breeding goes on without rule.

The average value of cattle now is—cows, Rs. 6 each; buffaloes, from Rs. 15 to 30 bullocks, from 10 to 50. Ten years ago cattle cost about 25 per cent. less.

Uses Cattle are employed for plough and draught and dairy.

Both *rubee* and *khureef* crops are cultivated; the sowing time is in June and October.

Cattle are worked in the plough from 6 to 11 A. M. Bullocks only are used. Cattle are also used for draught and burden. Pack bullocks are used to carry hides. Dairy cattle are very few, buffaloes chiefly; the breeds above enumerated do not produce good milch cows; a cow gives only 1 seer a day: a great deal of this is due to the small quantity of food that is given.

Housing. Cattle are housed in temporary sheds during night in order to keep them warm. These sheds are constructed of thatch-work, saul uprights, grass walls and roofs.

Feeding and watering. Cattle are allowed to feed themselves just as they can. The cart bullocks are better cared for; they get *bhoosee,* oil cake, cotton seed, and wheat chaff.

The open country generally bears *doob* grass. In the forests there is *sondhaor miaree,* and *kaushai mearee* grows on low grounds. Water is obtained from wells and running streams.

Herding. Cattle are always herded; they are housed in cold weather during nights. The herds or *lingars* consist of 200 to 300 head of cattle.

Cattle are sent up from Lucknow and northwards to the Terai; they are sent up in November, where they remain till February. They come from distances of 140 miles.

Condition. Cattle are very low in winter; they pick up after February; during the rains they are in good condition.

Stock how kept up. The stock is kept up by breeding indiscriminately. Bullocks are castrated for draught; plough bullocks are not castrated. Even some of the draught bullocks are left entire. In my own estate Hansi bulls are kept up. But it is with the utmost difficulty that cows are kept from other bulls.

Markets. Peleebheeth of Bareilly, in Rohilcund, North-Western Provinces, is the only market where cattle are sold twice a week. People also get their cattle by private purchase.

Export. The cattle from Dhowrera and Luckimpore are exported towards Moradabad in North-Western Provinces, and those bred in Rohilcund are imported into Oudh as plough bullocks.

Export of hides. The export of hides is very large. Not less than 6,000 hides are exported to the North-Western Provinces (Delhi and Agra) from the west of the Cowriala river annually. In the Baraich tract, Jews conduct the hide trade and export to Lucknow. The number of hides exported has increased of late.

[On account of the demand for hides in the Calcutta market, the informant, Mr. Foy, has commenced to deal in hides. There are 10,000 hides sent to Calcutta weekly. The Jews have their agents from the Cowriala to Goruckpoor, or rather the Gunduck, and in Calcutta.]

The present price of hides is Rs. 24 the score, these being *murdari* hides.

Advances are made to chamars for the supply of a stipulated number of hides within a certain time; but the required number of hides is seldom obtained in time.

Mortality. The ordinary mortality among cattle is about 4 per cent., including deaths by starvation; 50 per cent. die from murrains.

History. Murrains have prevailed periodically in this locality. The disease is called *pokenah—*
Character of plagues. diarrhœa and dysentery, which also prevails among sheep. Imported cattle are subject to fever. The cause of these diseases generally depends upon the pasture.

Season. Diarrhœa generally prevails in October; fever in September and October; foot and mouth disease comes on in March. Sheep are known to get foot rot. An outbreak generally lasts for two months.

Contagiousness. Diarrhœa is contagious; fevers are endemic; foot and mouth disease is also contagious.

Treatment. Alum is applied to the mouth in foot and mouth disease, as also *kameela* to the feet. This treatment has been successful. No sanitary measures are adopted.

KHEREE.
Mr. A. Foy.

Buffalo horns are exported; cow horns and hoofs are not taken. Horns and hoofs.

Sheep get diarrhœa, and with it sticky discharge, from the nose and slight discharge from the eyes; off feed; they die in 2 or 3 days. This did not, however, happen during the cattle plague. Sheep got the disease in May 1869, and 3 years ago there was a general plague among the sheep in Oudh, 50 to 60 per cent. dying. They give a little mustard oil to the sheep. Other animals.

Two months ago there was dysentery in my estate, and 1½ month ago a new disease, alluded to in a letter of my agent, made its appearance: no disease now. At changes of season these diseases become prevalent. Disease at present prevailing. Weather.

I should wish the breed to be so far improved as to give us the advantage of dairy produce; cross-breeding under proper agency and management will in a few years effect it. Breeding.
It will be very desirable to have a veterinary and agricultural school here, as no one in the province has any definite idea of diseases and their treatment. All the people complain as I do, and my agent mentions this want particularly in his letters to me. Veterinary school.

Information regarding cattle murrain in the District of Kheree by MR. C. N. CARNEGY, *—dated 25th May* 1870. Mr. C. N. Carnegy.

The following information applies to the Sahibgunge Grants, Tehseel Mohumdee, and Kheree District:—

Area 8,480 acres; bounded, north by the Patna Nuddi; south by the Pepuria Etowa estate; east by the Rajah of Mohumdee's grant; west by the Pepuria Etowa estate and grant; greater part mixed soil, second quality, partly sandy. Locality. Soil.

About 9,000 head of cattle graze on the grants, being 170 to the square mile. Number of cattle.

The breeds are the *parair* breed of cows, and buffaloes of all common breeds.

Price per head now and ten years ago:—

Cows per head	Rs. 7-8	Rs. 5
Bullocks	„ 40	„ 30
Buffalo cows	„ 20	„ 25
Ditto bulls	„ 12	„ 15

Cattle are used for agriculture, draught, dairy, and breeding. Bullocks are alone employed for agriculture; ploughing is carried on in February and March and during the rains; and treading out the grain in November, April, and May. The best bullocks are reserved for draught (carts): these are generally well fed and housed. Uses of cattle.

About 10 per cent. of the cows and all buffalo cows are kept for dairy purposes; 90 per cent. of the cows and 2 per cent. of the bulls are kept for breeding; about 20 per cent. of the bullocks are kept for agriculture alone; 40 per cent. for draught and agriculture; and 38 per cent. for draught alone.

Cattle used for agriculture, draught, and dairy are housed in grass-roofed sheds in the cold weather and rains, and in open courts from April to July. Cattle used for breeding are driven into paling enclosures under the banian or any other shady tree. Housing.

Draught bullocks are fed in *maunds* with *bhoosa*, gram and oil-cake steeped and mixed up together with salt every second or third day. All others are simply allowed to graze in the jungles. The jungle grasses are *doob, surwara, putawer, khooss, khauss, kuniar, gaurer, bybe, badha,* and *jarrooa*. When grasses are scarce cattle feed on the leaves of the *peepul*, wild date, and other trees, and on the flower of the *dak* tree and *mowah*. Cattle are mostly watered from the Kutna Nuddi, but sometimes from pools and wells. Feeding. Watering.

Draught cattle are never herded; those used for agriculture and dairy are herded during the day, but are tied separately at night. Cattle used for breeding alone and buffalo cows are herded together day and night, and in all seasons. Breeding cattle are herded and driven north into the Nepal country, a distance of 60 or 70 miles, from November till June. Herding.

The general condition of cattle is good. The stock is kept up by breeding. The very best bulls are retained in the herds; I have known Rs. 900 paid for a pair of *saars*. No cattle are imported. Stock, how kept up.

There are no hâts nor markets near this place; young bulls, mostly two-year-olds, are sold to dealers on the spot in October and November. Markets.

The cattle dealers collect large droves of young bulls and send them off to the different markets in Rohilcund and to Pehanney, Hurdui District, and Sindowr, Nawabgunge District, Oudh; the latter is the great mart for cattle in Oudh. The *parair* breed are the hardiest and I think the best draught cattle in India; they fetch higher prices than any others as cart and *ruth* bullocks. Cattle droving.

I cannot tell the number of hide dealers that come here, but I believe they have much increased of late. Hides fetch about Re. 1-12 each; they sold formerly at four or five per rupee. Chamars collect and dry the hides and sell them to dealers. Hide trade.

KHEREE.

Mr. C. N. Carnegy.

Mortality.

On this estate about 40 per cent. of the deaths amongst cattle have been from plague; I believe about 7½ per cent. of cattle die or are killed by tigers annually.

History.

Plague occurred here in 1861 and 1867,—that is, on the grants; it has raged more or less in the neighbourhood every year for the last eight years.

Nature and origin of plague.

Varieties of cattle disease.

The cattle plague is called by the natives here the *raze*, and the great disease they suppose to originate amongst the cattle that go north to graze during the cold season, and to spread amongst the cattle here by infection. I believe the disease is much increased, if not originated, by the cattle drinking hot, bad water from pools in April and May. The *chupka* —swelling in the tongue, lips, and throat—is brought on by eating rank wet grass; and in July the *khoorah*—rot in the hoofs—(seldom fatal), by standing on damp foul ground at night. The *bissareh* (poison) is a swelling in the ears, neck, and forelegs. The *jonkee* is caused by small leeches in the stomach and on the liver (the latter two are very fatal if not doctored at once); the *jonkee* is brought on by grazing near the river in May and June: these diseases occur mostly during the rains.

Season.

These plagues lasted from April till October, and are worst in July; the *chupka* and *khoorah* prevail from July to September; *jonkee* in September and October. It is impossible to say how long the outbreak lasts; all depends on the size of the herd, the weather, air, and precautions taken to prevent the spread by infection.

Statistics.

During the plague of 1867 about 80 per cent. of the herds infected were attacked, of which 25 per cent. recovered and 75 per cent. died.

Male buffaloes of all ages and all cattle in good condition are most liable to attack; lean cattle always escape free.

Symptoms.

The symptoms of *raze* are,—eyes watering and drooping ears; in about three hours after, the body becomes cold; shiverings begin; refuse food and don't ruminate; hair stares; bowels become loose and expanded; shortly, frequent motions of blood alone; tongue, nostrils, and throat swell; skin and tongue crack; there is a very offensive smell; animal breathes with great difficulty; refuses to move; lies down with the head outstretched; mortification ensues, and then death; animal seems to have lost all feeling of pain during the last six or eight hours; the secretion of milk is suppressed from the first attack.

Post-mortem appearances.

No body has been examined by me personally. Chamars say the stomach and entrails are inflamed and full of blood; liver swollen, flabby and discoloured; gullet one mass of sores.

Contagiousness.

Plague and *chupka* are contagious; other diseases are not.

Treatment.

I gave a buffalo cow infected a dose of opium 2 drachms, *churrus* 2 drachms (Indian hemp), and calomel 1 drachm; it recovered, but I cannot say if it was owing to the medicine, as I had no opportunity of trying it again. Natives try no remedy for the plague; for *chupka* they use decoctions of *nim* and other leaves and barks; the *khoorah* is cured by a decoction of tobacco and onion juice, and by *gunda beroza* (resin). The *bissareh* is cured by bleeding from the ear, the part first attacked. The *jonkee* is cured by purging with salt and *rohinee* (English name not known).

Sanitary measures.

The only sanitary measures adopted by the natives are, the separation of sick from healthy and burial of the carcasses.

Horns, hoofs, &c.

Hides are disposed of as stated above; horns and hoofs are of no value here, and are buried with the carcass.

Pigs.

Pigs are very liable to infection by the plague, and it has been noticed as a fact that when the plague breaks out amongst pigs it leaves cattle entirely.

Human disease.

As I had the honor to report to the Deputy Commissioner in September 1867, I have always noticed that cholera and malignant fevers amongst human beings follow the tracks of the plague amongst cattle; I leave it to others to decide why, but I believe it is partly owing to the noxious air, and partly to the chamars eating the meat of diseased cattle: disease breaks out first amongst them.

Present disease.

No disease prevails on this estate, but the plague has been raging all round about; it has decreased within the last fifteen days.

Weather.

The plague is always worst in hot, sultry weather, and generally decreases after a heavy fall of rain, especially if followed by a westerly wind.

Plague worst at commencement.

Second attack.

The plague is always worst at the commencement for the first ten days or so: every beast attacked dies after some time; the attacks become less severe; cattle linger on longer, and in many cases recover. Natives say that cattle which have recovered from the plague are never attacked again; I am by no means certain of this. The above remarks may be made regarding all epidemics of both men and beasts I think.

Housing.

Cattle, and men too, would, I think, be much better if the former were kept outside the village in sheds or courts built on high sloping ground to the north of the village, if possible; I have tried this with good effect, but, unsupported by Government, very little can be done that goes against the native ideas.

DISTRICT OF SEETAPORE.

Summary of Returns received from the District of Seetapore.

Pergunnah, Tehsil, or Talooqua.	Villages or No. of Villages.	Names of Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No, recovered.	No. still ill.	Remarks.
Baree ...	47 villages ...	Pokna ...	1268 F. (1861)...	July 19, 1870.	68,544	183	139	44	...	*Pokna* and *burri* are names for rinderpest; *khoorah* and *chupka* are foot and mouth disease; *guturooa* and *soojwa* are apparently hoven. The death-rate among stock and attacked from each disease is:—
		Khoorah ...	1267 F. (1860)...	Ditto	...	2,332	1,170	1,162	...	
		Chupka ...	1266 F. (1859)...	Ditto	...	40	20	20	...	
		Guturooa ...	1265 F. (1858)...	Ditto	...	107	99	8	...	
		Soojwa ...	1269 F. (1862)...	Ditto	...	295	226	69	...	
Misrik ...	71 villages ...	Burri ...	July 1869 ...	Ditto	129,700	2,607	2,139	462	...	
		Khoorah ...	Ditto ...	Ditto	...	977	313	664	...	
		Guturooa ...	Sep. 1869 ...	Ditto	...	151	108	43	...	
		Soojwa ...	July 1869 ...	Ditto	...	113	70	43	...	
Biswan ...	21 villages ...	Pokna ...	February 1869 to Aug. 1870.	July to Sept. 1870	59,000	2,459	1,755	343	361	
		Chupka ...	Apl. and June 1870.	July 1870 ...	...	336	115	217	4	
		Guturooa ...	June and July 1870.	July & Aug. 1870	...	266	183	58	25	
		Soojwa ...	June 1870 ...	Ditto	...	61	55	6	...	
Seetapore ...	114 villages ...	Khoorah and Chupka	Sep. 24, 1870 ...	Nov. 1, 1870 ...	125,310	5,147	2,042	1,025	2,080	
Ditto ...	12 villages ...	Pokna or Deorarah	Apl. 1870 ...	July 19, 1870 ...	116,207	1,476	984	407	85	
				Total ...	498,761	16,544	9,418	4,571	2,555	

	Stock.	Attacked.
Pokna	1·0	74
Khoorah ... } ...	·7	41
Chupka ... }		
Guturooa ...	·08	74
Soojwa	·07	74

The general result is,—

Attacked per cent. of stock ...	3·3
Died per cent. of stock ...	1·9
Died per cent. of attacked ...	56·8

DISTRICT OF BARAICH.

BARAICH.

H. J. Sparks, Esq.

From H. J. SPARKS, Esq., *Deputy Commissioner, Baraich, to the President, Cattle Plague Commission,*—(*No.* 2229, *dated* 18*th October* 1870).

I have the honor to report that I have been informed that many cattle are dying in this district in the Pyagpore Elaka, some 15 miles from Baraich. According to the report, some cattle are taken ill suddenly, have a difficulty in breathing, and die in about an hour; for this illness the people have no remedy: others get a swelling in the foot, next day there are worms in it. The animals are tied up in a tank by way of cure; some recover, others die.

2. The second illness does not appear serious, and I have as yet received no detailed report regarding the first mentioned one; many animals, however, are dying, and as soon as I have collected information on the subject, a further report will be sent to you.

From H. J. SPARKS, Esq., *Deputy Commissioner, Baraich, to the President, Cattle Plague Commission,*—(*No.* 2296, *dated* 31*st October* 1870).

In continuation of my letter No. 2229, dated 18th instant, I have the honor to report that from information I have received many more cattle are dying, and have died, from foot rot than from the other disease which the natives call *guturooa.*

2. Neither the District Superintendent nor myself have seen an animal suffering from the latter disease, but the natives state that almost every animal attacked has died. It is thus described:—swelling in the throat, great difficulty in breathing, gurgling in the throat, flow of froth from the mouth, and entire loss of appetite. The animal has usually died within 24 hours from time of illness.

3. There has been a good deal of illness among the cattle throughout the district. In the Korasur Tehseel inquiry has been made in 47 villages: out of 1,343 head of cattle attacked, 1,073 died. I give the result of inquiry made personally by the District Superintendent in five villages within easy distance of Baraich; these villages were visited at hap-hazard.

4. In the Nanpara Tehseel inquiry was made regarding 219 villages with the following result: 9,838 head of cattle had been attacked; of these 4,176 died, 3,665 recovered, and 1,997 are still ill.

Copy of a docket from H. J. SPARKS, Esq., *Officiating Deputy Commissioner, Baraich, to the Commissioner, Fyzabad Division,*—(*No.* 2501, *dated Baraich, the* 2*nd December* 1870).

In reply to No. 6750, dated 24th ultimo, reports that there is no reason to suppose that any of the cattle have been poisoned.

The Officiating Deputy Commissioner is not aware what is the derivation of the word *khang; guturooa* is believed to be derived from *ghate,* the throat, as it affects that part.

OUDH.

W. B. Harrington, Esq.

From W. B. HARINGTON, Esq., *Officiating Secretary to the Chief Commissioner, Oudh, to the President, Cattle Plague Commission,*—(*No.* 263, *dated Lucknow, the* 13*th January* 1871).

In continuation of my letter No. 6115, dated 21st December, I am directed to inform you that, from further inquiries made regarding the derivation of the words *khang* and *guturooa,* the Chief Commissioner learns that the former is a compound word, *kha* and *ang, i. e.,* "body-eater,"—an insect supposed to be bred in the foot, and which is said to devour the whole body. *Guturooa* is a corruption of the word *gatterawan: gatti* throat, and *rewan* hair, or hair growing in the throat of cattle, causing a continued cough, and ultimately death.

DISTRICT OF PERTABGHUR.

PERTABGHUR.

C. R. Crommelin, Esq.

From C. R. CROMMELIN, Esq., *Officiating Deputy Commissioner of Pertabghur, to the Secretary to the Chief Commissioner of Oudh,*—(*No.* 1393, *dated* 10*th July* 1869).

I have the honor to inform you that on the 22nd May last Mr. Gartlan, of the Palmerland Estate, wrote to me that there was a disease amongst the cattle in his quarter. I immediately sent directions for the diseased cattle to be separated, and for a report regarding the disease, and why Tehseeldars had not reported.

2. On the 2nd June the Tehseeldar of Behar reported that the cattle in Pergunnah Ramessur only had suffered; and on the 16th he reported that there had been so much cholera about, that the Chowkeedars had not come in to report, and that, from what he had heard, not many cattle had died. Rajah Hanwant Singh told me the mortality was exaggerated.

3. The Tehseeldar of Patty reported on the 9th June that there was very little mortality in his tehseel, and this was confirmed by Rai Madho Pershad, Talookdar of Dalippur.

4. The Tehseeldar of Pertabghur reported on 14th June that in Sundanpur only, a village in Talook Dandi Kath, cattle had died, but in no other mouzah in the tehseel.

5. The Tehseeldar of Salone reported on 9th June that in four villages about 100 cattle had died; that the people employed music, fumigation, rubbing the animals with charcoal &c; that the disease was a swelling of the head about the jaws; that the animals could not eat; and that at that time the mortality had ceased.

6. The Tehseeldars were again ordered to report the number of cattle that had died.

7. The Tehseeldar of Pertabghur reports the death of 1,097; Salone, 1,661; Behar, 832; Patty, 1,053. This result is far larger than the first reports of the Tehseeldars led me to anticipate. The mortality has ceased.

From C. R. CROMMELIN, Esq., *Officiating Deputy Commissioner of Pertabghur, to the Secretary to the Chief Commissioner, Oudh,*—(*No.* 1829, *dated the* 1*st September* 1869).

In reply to your letter No. 3052, dated 15th July 1869, I have the honor to send a further report on the cattle disease which prevailed in the district in the months of May and June.

2. The Tehseeldar of Patty reports that the disease came from the direction of Mirzapore Chowharee, a village in Allahabad District, and to the south-west of the tehseel.

3. The Pertabghur Tehseeldar reports that the disease came into his tehseel from the direction of Thannah Lhow, also in the direction of Allahabad. The Tehseeldar of Behar reports that it came from the direction of Pertabghur. From these reports it appears that the disease came generally from the south, and extended from Patty to Behar in the latter tehseel, going from south to north to the Salone Tehseel.

4. The natives call the disease *baghi*. The head and jaws of the animal swell, it is unable to eat, and the stomach swells. Little is done in the way of medicine: they perform *poojah*, accompanied with music, and in some instances give ghee, *goor*, and chillies.

5. Some cattle have died from a kind of cholera—violent purging accompanied with blood—and some from cow-pox—*chechuck;* the latter appears after a disease in the feet called *baghi*. This attacks the sole of the foot about the division of the hoof. A good many have died from hunger, and this I fancy has had a great deal to do with the deaths generally.

6. In my letter No. 1393, dated 10th July 1869, I reported that 4,643 cattle had died. From new returns received, the total number of cattle that have died is 5,735. All Tehseeldars report that there is now no disease.

Summary of Returns received from the District of Pertabghur.

Tehsil, Pergunnah, or Talooqua.	Villages or No. of Villages.	Names of diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
PATTY ..	326 villages ...	Baghi, pox, cholera, khoorja, ishal.	June 1, 1869 ...	Feb. 15, 1870 ...	37,968	1,309	1,309	...	...	Cholera, pox, and bowel complaint are evidently rinderpest; foot and mouth disease also prevailed. The general result of the table is—
	Shekpur ...	Cow-pox ...	May 21 and 26, 1870.	July 19, 1870 ...	1,902	173	132	12	29	Attacked per cent. of stock ... 5·1
	Sunreh ...									Died per cent. of stock ... 4·1
	Sultanpoor ...									Died per cent. of attacked ... 80·7
	Patkathyakhun ...									
	Rathindra ...									
	Seloudhi ...									
	Nowrerah ...									
	Donye ...									
	Karka ...	Bowel complaint	October 2, 1869	Aug. 24, 1870	54	15	15	...	...	
	Mahomedpoor ...				115	6	4	2	...	
	Wary ...				900	22	21	1	...	
	Pattikhas ...		„ 9, 1869...		100	2	2	...	...	
	Dum-Dum ...		„ 16, 1869...		215	6	6	...	...	
	Roghnothpoor ...		Ditto ...		325	4	4	...	...	
	Bhysori ...	Cow-pox ...	March 26, 1870		300	2	2	..	...	
	Bisanpoor ...		April 23, 1870 ...		581	8	8	...	...	
	Luniapoor ...		July 15, 1870 ...		20	2	2	...	...	
	Gowra ...	Bowel complaint ...	„ 23, 1870 ...		50	1	1	...	..	
	Parsani ...	Cow-pox ...	Aug. 6, 1870 ...		286	2	2	...	...	
BEHAR... ..	Pureh Meharwan...	Ghurka ...	„ 9, 1870 ...	.....	100	40	35	...	5	
	„ Katee ...									
	Mozra Nowbosta ...									
	4 villages ...	Baghi, pox, cholera, khoorja, ishal.	„ 1, 1869 ...	Feb. 15, 1870 ...	505	36	33	3	...	
PERTABGHUR ...	51 villages ...	Cow-pox ...	May 2 to July 3, 1870.	Sept. 6, 1870 ...	888	645	295	200	130	
	Bhadowsi ...	Foot and mouth disease.	From Aug. 31 to Sept. 14, 1870.	„ 23, 1870...	200	1	...	...	1	
	Bansi ...				300	1	1	...	...	
	Bhadowhi ...				200	5	2	3	...	
	Buhochara ...				100	2	2	...	...	
	Harcharipoor ...				100	1	...	...	1	
	Ajgurah ...				100	2	...	...	2	
	Mohamedpoor ...				100	15	2	...	13	
	Khanipoor ...	Cow-pox ...	June 11, 1870 ...	July 19, 1870 ...	116	64	15	49	...	
	Dhowrarah ...									
	Sandhour ...									
	Bhujed ...									
				TOTAL ...	45,525	2,364	1,893	290	181	

DISTRICT OF SULTANPORE.

Summary of Returns from the District of Sultanpore.

Pergunnah, Tehseel, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Mosafir Khana ...	Mirzamooddunpore	Cholera ...	March 28, 1869...	March 7, 1870 ...	243	56	38	13	.....	Murrain is indicated by *cholera*, *small-pox*, and *pokna*; foot and mouth disease by *kungwa*, *khoorta*, &c.
	Chittainugger ...		Aug. 25, 1870 ...	Aug. 25, 1870 ...	167	58	34	17	7	
Esowlie ...	Amrulo ..	Cholera ...	June 1870 ...	June 1870 ...	312	117	79	38	.....	
Ameltice ...	Rajapore ...		July 11, 1870 ...	Aug. 31, 1870 ...	216	16	15	1	.....	The general result is—
	Gurhthoolia ...		Aug. 10, 1870 ...	„ 25, 1870 ...	140	23	23	.....	.....	Attacked per cent. of stock ... 12·6
Moni ...	Toolsepore ...		July 28, 1870 ...	July 28, 1870 ...	177	53	45	8	.....	Died per cent. of stock ... 5·5
Ordian ...	Lulanugger ...		Sept. 1, 1870 ...	Sept. 21, 1870 ...	155	12	9	3	.....	Died per cent. of attacked ... 45·02
Sultanpore ...	Mujwara ...	Chitrahooah ...	„ 28, 1870 ...	Oct. 28, 1870 ...	347	20	3	17	.....	
	Ootairee ...		„ 9, 1870 ...	„ 11, 1870 ...	255	51	.....	51	... ..	
	Amutpore ...	Goorkhoor ...	„ 26, 1870 ...	„ 28, 1870 ...	139	9	9	.....	.....	
	Pindee ...	Chitrahooah ...	Ditto ...	Ditto ...	100	20	12	8	.....	
	Khalliapore ...	Goorkhoor, Chitrahooah.	„ 27, 1870 ...	Ditto ...	60	4	4	.....	.....	
	Sadhkhanpore ..	Kunkhoor ...	„ 29, 1870 ...	Oct. 11, 1870 ...	40	5	3	2	.....	
	Dowlutpore ...	Kungwa ...	Oct. 8, 1870 ...	„ 28, 1870 ...	116	12	1	10	1	
Mungowlie ...	Katadee ...	Khoorta ...	Sept. 4, 1870 ...	„ 28, 1870 ...	230	30	5	25	.....	
Madhubpore ...	Gowrigunj ...	Cholera ...	„ 12, 1870 ...	„ 11, 1870 ...	155	6	5	1	.....	
Soorhoorpore ...	Hurpore ...		„ 14, 1870 ...	„ 8, 1870 ...	100	2	2	.....	.....	
Meopoor Deela ...	Kullianpore ...	Chitra or Cholera.	„ 15, 1870 ...	„ 8, 1870 ...	150	4	4	.....	.....	
	Ragoopore ...		„ 17, 1870 ...	„ 11, 1870 ...	65	2	1	.....	1	
	Gopalpore ...		„ 18, 1870 ...	Ditto ...	50	3	3	.....	.....	
	Dewaree ...	Chitra and Kungwa.	„ 23, 1870 ...	Ditto ...	200	5	1	.....	4	
	Kapooram ...		„ 24, 1870 ...	Oct. 28, 1870 ...	225	9	6	.....	3	
	Ditto ...	Small-pox ...	„ 24, 1870 ...	Ditto ...	225	10	6	.....	4	
Gopalpur ...	Kukna ...	Chitra or Cholera	„ 20, 1870 ...	Oct. 11, 1870 ...	150	7	4	.....	3	
Dilas Sing and Jaitpurn Sing.	Maroofpore ...	Small-pox ...	„ 22, 1870 ...	Ditto ...	150	2	2	.....	.....	

Summary of Returns from the District of Sultanpore,—continued.

Pergunnah, Tehseel, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Maharpoor ...	Aroulie ...	Kumkhoor ...	Sept. 25, 1870 ...	Oct. 28, 1870 ...	100	25	.....	25	.....	
Somruthpoor ...	Burahree ...	Khoorga ...	Ditto ...	Ditto ...	264	23	17	6	.....	
Dehra ...	Khalispore Doorga, Kurnaipore ...	Kungwa ...	Ditto ...	Oct. 8, 1870 ...	150 250	43 50	6 16	30 27	7 7	
Rasee ...	Wudduaypore ...	Cholera ... Khoorta ...	Sept. 27, 1870 ...	„ 28, 1870 ...	607	62 3	40 1	4	18 2	
Chandee ...	Ghatanpore ...	Cholera ...	Ditto ...	Ditto ...	117	9	9	.....	.....	
Ultar, Soma Kallan	Suraich ...	Chitrahooah ...	Sept. 28, 1870 ...	Ditto ...	200	80	25	50	5	
Jehangir Buks Khan.	Ganges ...	Kungoor ...	Ditto ...	Oct. 8, 1870 ...	200	29	2	3	24	
	Bisaikpore ...		Sept. 29, 1870 ...	Sept. 29, 1870 ...	100	1	.....	1	.....	
	Jafarpore ...	Kungwa ...	Oct. 12, 1870 ...	Oct. 12, 1870 ...	250	4	1	1	2	
Muniarpur ...	Salarpore ...	Chirhooa ...	Sept. 28, 1870 ...	„ 28, 1870 ...	40	12	7	5	.....	
Hussanpoor ...	Santa ...	Kungoor ...	„ 29, 1870 ...	Sept. 29, 1870 ...	60	16	.....	12	4	
	Sadhpore ...				58	27	.....	15	12	
	Moongai ...	Pumgina ...	Oct. 7, 1870 ...	Oct. 7, 1870 ...	152	14	2	.....	12	
Badayoon ...	Tiraee ...	Cholera ...	Sept. 29, 1870 ...	„ 11, 1870 ...	552	4	4	.....	.....	
Khyrut Ali Khan...	Misrowlie ...	Kumgoor ...	„ 30, 1870 ...	Sept. 30, 1870 ...	100	40	.....	25	15	
Koorwar ...	Rajapore ...	Pookunwa ...	Oct. 3, 1870 ...	Oct. 3, 1870 ...	25	2	.....	.....	2	
	Mahesh ...	Chitrahooah ...	„ 5, 1870 ...	„ 5, 1870 ...	100	5	.....	.....	5	
Mehdowna ...	Benowlie ...	Ghoor Ghoor ...	Sept. 4, 1870 ...	„ 11, 1870 ...	259	8	8	.....	.....	
				Total ...	7,751	984	443	403	138	

DISTRICT OF OONAO.

Extract from the General Remarks on the Oonao Crime Return for June 1869.

"I herewith append a statement showing the mortality amongst cattle in three Police Circles—Poorwah, Achulgunge, and Mowrawan—of this district. My attention was called to the subject by Inspector Khodabux, the Inspector of the Poorwah Circle. I have called for a statement from Police Officers of those Police Stations not included in the list now submitted. The mortality would seem to be very great: 83 per cent. of the cattle attacked succumbed to the disease. The disease is called by the natives *zahurbad:* this word I cannot find in Forbes. The Native Doctor tells me that the term *khunak* is an equivalent for *zahebodi; khunak,* according to Forbes, is quinsy suffocation. The Inspector says that the majority of the cattle die from a swelling of the glands of the throat."

Summary of Returns received from the District of Oonao.

Tehsil, Pergunnah, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Sufeeepore ...	Shahpoor, Mawai, Brahminon, Syabnath, Kushea, Asseewan.	Debee-ka-rooria...	Jan. 24, 1870 ...	Feb. 23, 1870 ...	2,452	186	146	24	16	*Debee, haiza,* cholera, and *pookta* indicate rinderpest. There seems to have been no other form of disease observed. The general result is—
	Muty Takoor ...	Hyza or Cholera ...	July 14, 1870 ...	Aug. 8, 1870 ...	458	14	9	.....	5	Attacked per cent. of stock ... 10·1
	Serai Seekain, Butlesees, Sukbunrajpatam.	Badah, Pukka, and Gurduha.	Sept. 5, 1870 ...	Nov. 21, 1870 ...	150	72	54	8	10	Died per cent. of stock ... 6·1
			Ditto ...	Ditto ...	650	40	25	15	.....	Died per cent. of attacked ... 61·03
			Oct. 1870 ...	Ditto ...	1,100	18	18	.....	.....	
Mohan ...	Shunkerpoor ...	Hyza or Cholera	May 8, 1870...	June 3, 1870 ...	2,382	87	58	3	26	
	Tukrobad ...									
	Kurondee ...									
	Surowlee ...									
	Bhuroulee ...		June 1, 1870 ...	June 15, 1870	246	13	9	4	.....	
	Hugla ...		„ 9, 1870 ...		300	11	4	7	.....	
	Huswa ...		„ 7, 1870 ...		264	11	4	7	.....	
	Hasupore ..		„ 8, 1870 ...		805	16	4	12	.....	
	Godhwan ...		„ 7, 1870 ...		217	20	16	4	.....	
	Dura ...		„ 7, 1870 ...		941	20	12	8	.....	
	Kuttra ...		April 1, 1870 ...	July 4, 1870	658	448	238	210	.....	
	Rampoor Godhwan.		June 1, 1870 ...		332	32	30	2	.....	
	Tikrabad ...		May 25, 1870 ...		192	42	29	13	.....	
	Husunpore ...		June 23, 1870 ..		305	5	1	.....	4	
	Serai Mulackadam..		„ 10, 1870 ...		519	19	5	9	5	

Summary of Returns received from the District of Oonao,—continued.

Tehsil, Pergunnah, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Mohan,—*contd.* ...	Sedhour ...	Hyza or Cholera	June 22, 1870 ...	July 4, 1870	304	4	1	.....	3	
	Kharabad ...		„ 4, 1870 ...		130	30	25	5	.....	
	Kureemabad ...		Ditto ...		171	21	15	6	.....	
	Tikra ...		March 23, 1870...		541	279	62	214	3	
	Beechowlee ...		June 1, 1870 ...	Aug. 26, 1870 ...	2,438	297	210	32	55	
	Goondah ...		Aug. 24, 1870 ...	Sept. 19, 1870 ...	190	58	41	7	10	
	Dhunuahra ...		Sept. 7, 1870 ...	Ditto.	290	15	10	5	.....	
Oonao ...	Burkundi ...	Cholera ...	July 10, 1870 ...	July 13, 1870 ...	898	200	159	41	.....	
	Muslawun ...		„ 3, 1870 ...	„ 16, 1870	250	43	32	2	9	
	Kuttra ...		„ 11, 1870 ...		100	18	12	1	5	
	Shahpoor ...		„ 5, 1870 ...	„ 19, 1870	172	5	4	1	.....	
	Chukmousee ...		„ 2, 1870 ...		24	13	9	4	.....	
	Dowlutpoor ...		„ 10, 1870 ...	Ditto.	255	4	4	.....	.....	
	Bheekareepoor ...		„ 15, 1870 ...	July 27, 1870 ...	12	3	3	.....	.....	
	Mavai ...		Aug. 10, 1870 ...	Aug. 18, 1870 ...	235	22	15	.....	7	
	Beekeepore ...		Sept. 2, 1870 ...	Sept. 26, 1870 ...	112	27	22	5	.....	
	Burdahai ...	Gurduha ...	July 15, 1870 ...	July 27, 1870 ...	100	4	1	3	.....	
	Oonao Khas ...	Chupraha ...	„ 18, 1870 ...	Aug. 1, 1870 ...	2,777	20	9	.....	11	
Poorwa ...	Atateurer ...	Not known ...	June 13, 1870 ...	June 30, 1870 ...	9	9	5	4	.....	
Mowrawan ...	Hyassa ...	Pookta ...	July 25, 1870 ...	July 27, 1870 ...	393	53	23	7	23	
	Lowah ...		„ 25, 1870 ...	Aug. 16, 1870 ...	88	14	10	2	2	
	Hurdi ...	Hyza ...	„ 20, 1870 ...	Ditto.	391	47	25	8	4	
Asseewan ...	Brahminon ...	Hyza ...	Aug. 29, 1870 ...	Sept. 18, 1870 ...	477	16	8	3	5	
				Total ...	22,328	2,256	1,377	676	203	

DISTRICT OF LUCKNOW.

From J. W. QUINTON, Esq., *Deputy Commissioner of Lucknow, to the Commissioner of the Lucknow Division,*—(*No.* 4285, *dated the* 1*st September* 1869). J. W. Quinton, Esq.

I regret to report that a disease, apparently of an epidemic character, has appeared among the cattle of several villages in the Mulliabad Tehseel.

2. From a local inquiry I have ascertained that the first cases made their appearance in two villages on the banks of the Goomtee in the end of Jeth. In consequence of the great scarcity of pasture at that season, crowds of cattle from long distances resorted to the river, and to this crowding the generation and propagation of the disease is doubtless to be attributed. The symptoms reported are,—fever for a day, followed by bloody evacuations, and water running from the mouth and nostrils. This continues for five or six days, and then the animal dies.

3. No treatment is attempted by the people, and their only hope is in *poojah*. They have not hitherto isolated the infected cattle, or even buried the carcasses of those that died.

4. From the two villages where it first appeared, it has spread to others along the banks of the river, in some of which it is stated to be dying out.

5. I have directed the Peshkar of Mulliabad, with as many Chaprassees as can be spared, to visit all the infected villages, to use every means to isolate the infected cattle, and to have the carcasses of all that die buried with their hides. He has also been directed to impress in every way on the Zemindars the adoption of the precautions recommended at page 7 of Dr. Kenneth McLeod's letter, received under docket No. 14-156, dated 29th March 1869.

6. The Police will also be ordered to co-operate as far as possible.

7. Copies of this letter will be sent to Secretary, Chief Commissioner, and to Deputy Commissioners of Hurdui, Oonao, Barabankee, Roy Bareilly, and Seetapore.

From J. W. QUINTON, Esq., *Deputy Commissioner of Lucknow, to the Commissioner of the Lucknow Division,*—(*No.* 4553, *dated Lucknow, the* 15*th September* 1869).

In continuation of my letter No. 4285, dated 1st instant, I have the honor to report that since the 11th instant 15 villages have been visited by the Peshkar in which the disease was reported to be most virulent.

He has succeeded in persuading the people to isolate the diseased from the sound cattle, though he was unable to induce them to remove the former to any long distance on account of the expense.

The carcasses of cattle that died have been interred, and the people have promised to bury at once in future, with their hides, the carcasses of such cattle as may die.

The appended statement shows the state of disease in the villages visited by him.

Statement showing the state of the Cattle Disease in the Mulliabad Tehseel.

	Villages.	Number of cattle that were attacked.	Number since cured.	Number that died.	Number now suffering.	Remarks.
Pergunnah Mulliabad.	Rodhun Khera	150	30	40	80	Disease prevailing still.
	Para	90	20	50	20	„ subsiding.
	Kurrania	1	...	1	...	„ commencing.
	Gurhie	6	...	4	2	„ subsiding.
	Bussarie	65	15	25	25	„ prevailing still.
Pergunnah Mahonah.	Sultanpore	14	3	9	2	„ subsiding.
	Bahadoorpore	21	1	15	5	„ „
	Ikdurria	207	150	57	...	„ disappeared.
	Rajapore	115	20	70	25	„ prevailing still.
	Hurwas	91	30	60	1	„ subsiding.
	Buggaba	...	...	...	...	„ not apparent here.
	Mullookpore	4	...	4	...	„ subsided 15 days ago.
	Bhugowanpore	...	...	...	...	„ not apparent here.
	Bulwa	1	...	1	...	„ subsided one month ago.
	Nowrunpore	5	...	5	...	„ „ 20 days ago.
	TOTAL ...	770	269	341	160	

BIJNOUR. *Village Bijnour, 8 miles south of Lucknow,—visited 8th May 1870, 6-30 A. M.*

Evidence of villagers. A villager, 76 years old, says that he does not know the name of the disease, but that he knows that cattle plague appears in the village every 4 or 5 years: calls the disease *vaba*.

Periodical prevalence of *vaba*. Has seen this disease about 10 or 15 times in his life. There are nearly 1,000 houses here.

Murrain in 1867. LALLA and CHEDEE, cultivators of Bijnour, 50 to 55 years old, say that there is no disease of any sort in the village now, but they heard 10 or 15 days ago that 2 or 3 buffaloes died here; did not see them sick, and do not know what they died of. Three years ago there was murrain in the villages, and 10 or 15 head of cattle died thereof. The informants did not lose any cattle; one of them (Lalla) had 2 of his bullocks sick, but they recovered. Have

Symptoms. seen only 2 murrains during their lives. The symptoms are,—sticky discharge from the nose and running from mouth, sometimes blood; lower gums raw; purging; then offensive stools with great force, containing either black or bloody streaks; the animal affected died in 2 or 3 days; did not see any eruptions or shivering; do not know the name of the disease. Tears fall

Foot and mouth disease. in some cases from the eyes; feet don't get sore as they do in another disease called *khoorah*; slight cough in some cases and a hissing sound when breathing; the animal that recovers takes one year to recover thoroughly and get into good condition; but when they are well fed with

Bulls. *ghee* and *roti* they become strong enough to walk about in less time. There are no bulls in the village, but the uncastrated bullocks serve the cattle. The disease is considered to be

Infectiousness. infectious, as it goes from one bullock to another, and spreads from one village to the neighbouring villages. The cattle of this village and the neighbouring villages do not graze on the

Mode of spread. Terai, but in the neighbouring fields, where they mix with cattle of other villages. Three years ago the village of Mourungabad, standing on the side of the high road, was first attacked; the disease then attacked this village, and afterwards went to some village lying on the east side. Know human small-pox, and call it *chechuck*, but don't know that it attacks cattle.

Recent disease. DONA, an agriculturist of Bijnour, says that he lost one buffalo 6 or 8 days ago. It was ill for 15 days, and then died. It purged, then had offensive stools, was off feed, had a eruptions

Symptoms. all over the body, shoulders, neck, udder, and specially about the thighs; he did not notice any sores in the mouth; there was an offensive discharge from the mouth and vagina, and the rectum was swollen. The deaths that have recently taken place have occurred from one house to another for the last 3 months. The buffaloes that have died have been grazing in the fields with other cattle and with the cattle of Lowtha. Does not know of any cattle of Lowtha being affected.

Foot and mouth disease. The people say that foot and mouth disease appears in the village occasionally. In *khoorah* the mouth and feet are affected,—no purging; hence they distinguish this disease from the

Symptoms. other malady for which they have no name. Have never known an instance of any land lying

Cultivation. fallow in consequence of loss of cattle from murrain.

AUGNOO CHAMAR, of Bijnour, 50 years old, takes the skins of dead cattle and eats the flesh. Has seen sores in the throat and a yellowish kind of thick secretion in it in bodies of cattle that died of purging; does not sell the skins, but makes leather-bags for water; the

Disposal of hides. stomachs of those that die have black and red marks and appear rotten; these parts are not eaten, but thrown away.

PAHARPOOR. *Paharpoor, 15 miles south of Lucknow, visited 10th May 1870, 6-30 A. M.*

Case No. 1. 1. A female buffalo, 4 days ill, 3 years old: condition poor; has running from eyes, nose, and mouth; gums and buccal membrane very much congested; aphthous excoriation on one sore on the gums; purging; vagina not congested; animal very weak; no eruption; off feed for the last 4 days; great thirst; nasal membrane swollen and congested; ears drooping.

Case No. 2. 2. A cow, 8 years old, 3 days ill: condition poor; off feed and drink; profuse sticky discharge from nose and profuse running from eyes; muzzle perfectly dry; edge of nostril covered with viscid mucus; on opening the lips large excoriations are seen on lower gums, and several fissure-like cracks, all more or less covered with aphtha; breath most offensive; coat staring; excoriations on buccal membrane; purging—offensive matter and mucus; vagina very much congested, with aphtha-like deposit round the edges; animal very weak.

Case No. 3. 3. A bull, 4 years old: condition poor; 10 days ill; off feed, but drinks a little water; profuse sticky discharges from eyes, nose, and mouth; muzzle perfectly dry, and fissured; discharge from urethra; the discharge from eyes being caked on the cheeks; shivering a little; eyes seem closed; ears drooping; animal very weak; buccal membrane congested; has purged for 8 days, but it does not now purge much.

Case No. 4. 4. A cow, 8 years old, 6 days ill: condition poor; profuse sticky discharge from eyes and nose; muzzle dry; conjunctivæ congested; mucus membrane of gums, buccal membrane, and palate much congested; excoriation on buccal membrane and palate; vagina congested; aphthous deposit; off feed; a little thirsty; purging watery stools; hair standing, but no eruption; animal very weak; coat rough on back.

5. A male buffalo, age 7 months: condition poor, and evidently an unhealthy subject; ill 7 days; off feed and thirsty; deep congestion of mouth generally, specially of the buccal membrane; discharge from eyes and nose; purging dysenteric and most offensive stools, consisting of yellowish mucus with streaks and small masses of blood—flesh-like clots; no eruption on skin. PAHARPOOR. Case No. 5.

6. A cow, 10 years old, five days ill: condition very poor; sticky discharge from eyes, nose, and mouth; congestion of gums; small amount of aphthous deposit; conjunctivæ slightly congested; vagina deeply congested, with aphthous deposit; coat staring; ears drooping; purging watery stools and mucus. Case No. 6.

7. A bull, 2 years old, 12 days ill: slight congestion of gums; more congestion of buccal membrane; sticky discharge from eyes, nose, and mouth; coat staring; off feed; condition fair; ears drooping; congestion of urethra; has purged very watery stools for 10 days. Case No. 7.

8. A bull, 4 years old: condition fair; 6 days ill; is off feed, and drinks a little; sticky discharge from eyes, nose, and mouth; gums very much congested; aphthous deposit; four blister-like patches on tongue, but on examining more closely fissures are found; deep congestion of prepuce; no eruption on the skin; coat staring; sore in the clefts of hoof; purging watery stools. These sores, however, do not appear the result of blisters; conjunctivæ very much infected. Case No. 8.

NOTE.—This is a complicated case of rinderpest and foot and mouth disease.

9. A bullock, 7 years old: condition fair; 5 days ill; picks a little; very slight discharge from eyes, nose, and mouth; mouth hot; congestion of mucus membrane; no purging; is thirsty; coat staring; ears drooping; muzzle *somewhat* dry. Case No. 9.

LALTHA SINGH, JOWTHA SINGH, NARIEN SINGH, and BHOMERY SINGH, residents of Paharpoor, say,—there are nearly 400 head of cattle in this village, consisting of 150 bullocks, 200 cows, and 50 buffaloes. This is a Hindoo village, where mostly Thakoors live. It is quarter of a mile distant from the Cawnpore Road. There are milkmen and carters here; the latter send their carts to Roy Bareilly, Cawnpore, Lucknow, and other places. There are 175 or 200 families living in this village. The village also has a road passing through it which goes to Roy Bareilly. There is disease in this village. The villagers do not know the name of the disease, but they called it *poknal-ki-bimari*—purging disease. The disease has come here from the north side; can't exactly say from which village it came, but think that the disease came from Bunthra, Lucknow, and Bijnour. There are no goats or sheep in this village. This disease has been in the village 4 times within the remembrance of the informants, appearing at an interval of 8 or 10 years. The disease is not new, as the people heard from their fathers that in their time the malady existed; twenty years ago the disease was very severe in this village, and the mortality was 50 per cent. There was another attack 11 years ago, and the death-rate was 8 or 10 per cent. The disease has appeared in the village during the last fortnight; 14 died, 8 recovered, and 18 are still ailing. The disease is infectious and travels in the air; we know that separation is good, but cannot adopt it, as sometimes a young bull gets loose and mixes with sick cattle, carrying disease with him. The cattle are housed during night and grazed on open and common pasture during day, mixing with cattle of different villages, even with those of Bunthra and Bijnour, 2½ miles and 9 miles distant from this village. Those only who are well-to-do men—and they are few here—give *bhoosa* to the cattle during night; others do not give the animals anything. Rice straw is also given to the cattle, but not throughout the year. It is given in the month of Assar (July) to Kartic (October). Thirty years ago there was murrain in this village, and some of the people were obliged to let their lands lie fallow in consequence of loss of their cattle. Skins are taken by chamars and sent to Cawnpore. Village stock. Carters. Murrain prevailing. Source. Goats and sheep. History. Murrain in 1850 and in 1859. Infectiousness. Housing. Grazing grounds. Murrain in 1840. Cultivation. Skins.

Evidence of Ram Narain, Inspector of Police. Ram Narain.

The Inspector of Police, Ram Narain, says that he had not heard of cattle being poisoned in the interior for the sake of their skins or for any other purpose, but that he knows that cattle, goats, and sheep are stolen for the sake of their hides; the trade in hides has of late increased much, and the *sowdagurs* (dealers) make an advance of Rs. 5 to 7, and in some cases Rs. 200 to 250, and in some cases even Rs. 500 to 700, to chamars to ensure their supplying a stipulated number of hides within a limited time. No written deeds are known to be executed, but he has seen verbal contracts being made before witnesses; knows of no suits being instituted for breach of contract. The largest quantity of hides comes from the north (Baraich), Kheree and the Terai. Cattle poisoning. Cattle stealing. Hide trade. Advances.

Evidence of villagers—continued.

The people of this village get their cattle from Kalligunge Bazaar and other bazaars. The *Pikars* also come to the village periodically, bring the cattle from the north, and sell them here. Supply of cattle.

PAHARPOOR.

Breeds. Breeding. The cattle thus sold are of two breeds, *viz.*, *wooltarie* and *wangor*. There is another kind of cattle called *desi*. Special bulls are not kept for breeding purposes. Until recently, *Banjarees* (itinerant merchants) used to come in large numbers to these places and bring rice and wheat; they now come and scour the country, but in small numbers.

Price of cattle. Pasture land. They come from the north, including the Terai in the Nepal territory. The price of cattle has increased 25 and 50 per cent. There is a small tract of pasture land close to the village: this place is sometimes farmed by the Commissariat Department, and when it is thus farmed the Commissariat cattle graze there. The cultivation is gradually increasing, and the jungles removed year after year; the *churee* (pasture land) is generally very small; pasture land is assessed at a rate of 25 per cent. less than the rate other crop lands are assessed at. The people store the *bajra* and *jowara kurbee* for the cattle. This fodder is given to animals till the new crops are harvested. The *bajra* is heating, as it tends to dry up the milk; *jowara* is fattening.

Case No. 10. 10. A bull brought from Bunthra, 7 or 8 years old, in good condition, 15 days ill: buccal membrane congested, lower gums slightly congested; sticky discharge from nose; muzzle dry; purging; has not eaten for the last 14 days; is picking a little to-day; prepuce much congested; no eruption on the skin.

Case No. 11. 11. A bull from Bunthra, 10 days ill, 8 years old: condition fair; picks a little; purged for 4 days; bowels are improving now; no eruption on the skin; muzzle dry; congestion of urethra; a slight discharge from nose; mouth healthy; animal evidently recovering.

BUNNI.

Evidence of MUCKOOD, *of Bunni, aged* 36 *years.*

Muckood.

Foot and mouth disease. Disease among sheep and goats. Loss of sheep and goats. Symptoms. Treatment. Damp pasture. I own sheep, goats, and cattle; the latter had the disease called *khoorah*. They have just recovered; one bullock died, but of old age. The clefts of their hoofs were sore, and they had sore mouth; maggots formed in the sores; they recovered in 8 or 10 days. The sheep had swollen throat and went on purging watery stools, and got weak, till they died after a month or so. The sheep had sores in their mouth; the goats had blisters on the tongue, gums, and lip, and they got into the same state as the sheep, only they had no swelling on the outside of the throat. I lost 52 sheep out of 100, and 8 goats out of a herd of 35. I opened all the sheep and goats that died of disease and observed enlargement of the liver; it was very soft and flabby. The lungs were congested, and the stomachs were soft and flabby. I lost every one of the sheep that had the attack. Neither the goats nor the sheep had sore feet. The mouth of the cattle was affected first. I have seen the disease among sheep and goats often; it appears every 2nd or 3rd year in March and April; but whenever there is much rain the disease is sure to follow in March and April following. I doctor my own sheep and administer my own medicine, such as *comilah* and *kharee nimuck*—half a seer of the former to 6 seers of the latter, mixed up. This medicine is sufficient for 100 sheep; when they are having this medicine they are shut up, and only allowed to graze for a short time in the afternoon after the sun sets, and they eat a little,—sufficient to enable them to ruminate. I take my sheep and goats to graze generally to high ground, but in the months of March and April I am obliged to take them to damp places where some green grass can be obtained. I would not take them to such places at any other time of the year for fear of their dying from damp, for the place is almost like a tank. The last outbreak came on in Falgoon (February) and Magh (January) last; as the sheep got weaker, so their stomachs grew larger, and on being opened seemed to contain water; and they had the dropsy.

OONAO.

Evidence of PUSAIA AHEER, *of Dantowlee, Zillah Oonao, a mile south of Bunni.*

Pusaia Aheer.

Murrain prevails periodically. Purging. Foot and mouth disease. Symptoms of purging disease. Mortality. Treatment. I am a cow doctor; in my country cattle plague comes on every 3rd or 4th year. This disease appears generally in hot weather, and sometimes in cold weather; this disease is the purging disease from which the cattle die. The malady called *khoorah* comes on in May and June, wherein the hoof drops off and maggots form on the clefts of the hoof; the cattle also die of this disease (*khoorah*). The symptoms of the purging disease are,—purging stringy mucus; the white of the eye looks blackish; off feed; little thirst; sore mouth; excoriation on the buccal membrane and tongue, which sometimes become swollen at the commencement; there is discharge from mouth; dry cake of mud in the nostrils; forced breathing; sighing; no snuffing; ears droop; no eruptions on the skin; the cattle die—50 per cent. of the number attacked—in 8 days, more or less. I give the affected cattle cooling drinks, such as buttermilk or flour mixed with water; at the commencement of the disease I gave black pepper and ghee; I also apply *goolur* tree bark, bruised and mixed with water, to the sore mouth.

Evidence of GOOLAB AHEER, *aged* 33 *years, a resident of Bunthra,* 14 *miles south of Lucknow.* BUNTHRA.

Goolab Aheer.

I had before the outbreak of plague 23 head of cattle, of which nearly half the number died in Falgoon (February) last of the purging disease. I don't know any name for this disease, but we called it *pakne-ki-bimari.* I know what foot and mouth disease is. In this disease the feet are sore, and the affected animals don't purge. In the purging disease the cattle purge and the feet are not sore. The mouth also gets sore in the purging malady. In *khoorah* I have not seen sores in the mouth. In *pokna* the skin of the gums is pealed off, and of the lips; there is also a whitish stuff on the sores; they are, however, not so white as cotton; they are of a dirty white colour. The disease made its appearance in September, and lasted for 6 months. The disease prevailed in the village of Umburpoor, a mile to the south of my village, a few days before it came to my place.

Murrain in February 1870.

Foot and mouth disease.

Symptoms.

Source of disease.

Umburpoor stands on the side of the Cawnpore Road, and in that village there is a place where the carts passing along the road stop for the night and the bullocks are watered. I am a cultivator and hold 17 beegahs of land. I have two ploughs; two of my plough bullocks got ill, they subsequently recovered; they are now working. I lost 1 bullock, 8 buffaloes, 1 cow, and two calves. Our cattle while grazing mixed with the cattle of Humeerpoor, Umburpoor, Coroway, and other villages. When I was about 10 years old there was a like purging disease in our village, and our cattle died on that occasion. I don't know whether the disease is infectious or not. I have seen *khoorah* once only.

Grazing ground.

Murrain about 1840.

Evidence of LOCHUN, 35 *years old, and* PUNCHUM, 34 *years old, of Bunthra.* Lochun and Punchum.

There are a great many head of cattle in our village, but I cannot give the exact number (the Police Inspector says that there cannot be less than 400 head of cattle). We had the purging disease very badly in September last, and half the number of those attacked died; we have had the disease *khoorah* in our place, and it comes on every 2nd or 3rd year. The difference between *khoorah* and *pokna* is, that in the former the foot and mouth get sore, whereas in the latter there is purging blood, sore mouth, but no sore feet. *Khoorah* is not fatal; in *pokna* the affected animals die. In *khoorah* the feet of animals get very bad and maggots form there, and they consequently suffer for a long time, but they do not die. In the other disease the affected animals die. During the last outbreak I lost 7 head of cattle; my brother Nowhory lost the same number; Fuckeera Sing lost 3; Chhutter Patty lost 5; Lochun 11; Bursaty 1; Ram Churn 1; Nanoo 5; Bhowany 6; Holash 8; &c. Almost every family in the village lost 2 or 3 head of cattle. The price of cattle has increased 100 per cent. The witnesses say that there is at present no disease at Bunthra, but the Commission this morning saw sick cattle belonging to that village.

Village stock.

Murrain in September 1869.

Foot and mouth disease.

Symptoms.

Difference between *pokna* and *khoorah.*

Evidence of REWATI AHEER, 26 *years old, of Corowtee,* 10 *miles south of Lucknow.* COROWTEE.

Rewati Aheer.

There has been the purging disease in our village in the month of March last. The mouth of the affected animal also got sore. I know *khoorah*; the feet in this disease get sore, but not so in the purging disease commonly called the *pokna.* There was *khoorah* two years ago; no disease now. I have lost one buffalo. I have 19 more cattle which escaped attack: these animals have been and are kept in small batches in different rooms; three other animals were tied along with the diseased, but they escaped altogether. The buffalo and all other cattle belonging to me used to graze together. I don't know whether the disease is contagious or not, but I know that it comes with the air. The disease broke out in the village of Noroodden Kheree, and 3 cattle died. It then came to my place: our cattle and the cattle of Noroodden Kheree and of Bunthra used to graze together.

Murrain in March 1870.

Foot and mouth disease in 1869.

Segregation.

Contagiousness.

Evidence of GOLAUB THAKOOR, 35 *years old, Zemindar of Bujher,* 14 *miles south of Lucknow.* BUJHER.

Golaub Thakoor.

There are 30 or 40 families in my village and 100 head of cattle. I have never seen the purging disease in my village; there has been *khoorah,* but there were no casualties. My village stands on the Cawnpore Road.

NOTE.—The village Nebbera, Zillah Oonao, stands on the high road; but the people say that there has never been any disease here

LUCKNOW.

Village Aroonea, 14 miles south of Lucknow, visited 11th May 1870, 8 A. M.

Village stock. Marrain in October 1869. Source.

PREM CHURN SING, 65 years old, puttedar and agriculturist, says,—there are about 100 families in this village owning 300 head of cattle, of which number, however, 150 have died since (Kartic) October last of *pokna* (purging disease), such as has been seen by the Commission this morning. The disease at first appeared at Bunthra, the cattle of which village and the cattle of this place mix and graze together in the common pasture.

Chupka.

Never saw this disease before; I have seen a disease called *chupka* in this village which has proved fatal among cattle. It came on 3 years ago and killed nearly 100 or 150 animals. This disease has occurred 3 or 4 times in my time.

Symptoms.

The symptoms of this malady are,—sore mouth, maggots therein; sometimes running from eyes, nose, and mouth; off feed and drink; rumination stopped; no eruptions on the skin; no purging; the affected animals died from 6 to 10 days.

Hides.

One-third of the number are buffaloes. *Chupka* attacks cattle and buffaloes alike. No sheep or goats in the village. The skins of the dead animals have been taken by chamars, who pay 10 annas for each skin to the owner; they take the skins to Cawnpore and Lucknow.

Losses.

I have lost 20 head of cattle; Sobha lost 3; Bhai Laul lost 3; Rughonundun lost 6; Beddinauth lost 2; Emamy Dabobee 4—all these (4) died in one day; Echha Sing 2; Juggernath 3; Moolah 2. All the cattle of the village graze together in the fields. Those which are very good are kept in the stall. Henibux Sookly, Mohun Sing, and Sudhory Sing did not lose any cattle. All their cattle have been all along grazing with the village cattle. When we had *chupka* some of our cattle recovered of this disease. I have lost cattle during the recent outbreak of *pokna* which had recovered from *chupka*. In cases of *chupka* the feet are not sore.

Cattle poisoning.

Never have known of cattle poisoning; when cattle die, they die in numbers, and the disease of which they die is not only confined to this village, but spreads to the surrounding villages. We never even suspected any case of poisoning.

Summary of Returns received from the District of Lucknow.

Tehseel, Pergunnah, or Talooqua.	Villages.	Diseases.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Bijnour ...	Bunthra ...	Lila—Cholera ...	Last year and Nov. 1869.	Jan. 14, 1870 ...	600	100	70	.....	30	Cholera, diarrhœa, dysentery, &c., indicate rinderpest; foot and mouth disease appears also to have prevailed. The general result is—
	Bahadurnugger ...	Not known ...	January 1870	Jan. 21, 1870	70	55	50	5	.....	
	Pucham ...		Apl. to Nov. 1870		500	15	8	7	.....	
	Mathi ...		Jan. 1869 to Jan. 1870.		300	16	8	8	.....	
	Purmunpoora ...	Khavara ...	Oct. 18, 1870 ...	Dec. 7, 1870 ...	400	50	13	37	.....	Attacked per cent. of stock ... 13·
Chandowra ...	Chandowra ...	Hyza or Cholera ...	June 2, 1870 ...	June 28, 1870 ...	32	12	10	.....	2	Died per cent. of stock ... 10·2
Mohunlalgunj ...	Nandowlie ...	Dysentery ...	July 1, 1870 ...	July 13, 1870 ...	150	4	.....	.....	4	Died per cent. of attacked ... 78·9
	Doolapoor and Hossenabad.	Looseness ...	August 1, 1870...	Aug. 17, 1870 ...	200	32	25	.....	7	
	Ata Karowlee ...	Swelling of hoofs	July 15, 1870 ...	Aug. 17, 1870	150	65	36	.....	29	
	Kharee ...		„ 1, 1870 ...		77	4	4	.....	.....	
	Goanah ...		„ 30, 1870 ...		162	84	50	.....	34	
	Jambrowlee ...		„ 1, 1870 ...		300	7	7	.....	.....	
	Dalia Kurzapur ...		Ditto ...		360	20	20	.....	.....	
	Uchalkhera and Fakeer Khera.	Swelling of hoofs and Dysentery	Nov. 8, 1870 ...	Dec. 19, 1870 ...	747	101	86	.....	15	
	Balsing Khera ...	Hoolka ...	July 27, 1870 ...	Aug. 17, 1870 ...	308	111	57	.....	54	
Mulliabad ...	Bargawon ...	Dysentery ...	June 1, 1870 ...	Sep. 17, 1870	205	40	34	.....	6	
	Poorunpoor ...		„ 28, 1870 ...		100	40	28	.....	12	
	Mawy Saun ...	Bussing, Fits ...	May 1, 1870 ...		758	69	63	.....	6	
	Ramdasspore ...	Froth in mouth ...	August 13, 1870		288	15	13	.....	2	
	Chandowlee ...	Fever ...	July 1, 1870 ..	Aug. 17, 1870 ...	150	39	38	1	.....	
Etownjah ...	Ark Dunga ...	Looseness ...	May 25, 1870 ...	Nov. 16, 1870	246	33	33	.....	.....	
	Dingarpur ...	Gabouna ...	„ 15, 1870 ...		260	11	6	.....	5	
	Sewar ...		Ditto ...		298	65	40	.....	25	
	Besamohie ...		July 1, 1870 ...		528	20	18	...	2	
	Bhekaree ...		„ 16, 1870 ...		123	2	2	.....	.....	
	Beheeapur ...		„ 22, 1870 ...		58	5	5	.....	.....	
	Rae Sookpoor ...		„ 30, 1870 ...		126	4	4	.....	.....	
	Burreeaon ...		Ditto ...		189	12	12	.....	.....	
	Chuk Sagor ...		Ditto ...		41	2	2	.....	.....	
	Unrowra ...		Ditto ...		210	7	7	.....	.....	
	Manpoor ...		„ 31, 1870 ...		68	2	2	.....	.....	
	Ounce ...		August 1, 1870...		134	7	7	.....	.....	
	Bahadurpoor ...		Ditto ...		171	75	75	.....	.....	
	Sooltanpoor ...		Ditto ..		50	12	12	.....	.....	
	Kamalpoor ...		Ditto ...		100	10	10	.....	.....	
	Padawur ...		Ditto ...		150	20	20	.....	.....	
	Machagawan ...		„ 7, 1870 ..		42	3	.....	.....	3	
	Rajapoor ..		„ 10, 1870 ...		270	75	75	.....	.....	
	Doogra ...		„ 12, 1870 ...		333	22	22	.....	.....	
	Jumkhanwa ...		Ditto ...		363	139	139	.....	.....	
	Gownabaree ...		Ditto ...		60	2	2	.....	.....	
	Raepoor ...		„ 25, 1870 ...		195	10	10	.....	.....	
	Mohamedpoor ...	Poisoning ...	„ 1, 1870 ...		120	12	5	.....	7	
				Total ...	10,992	1,429	1128	58	243	

MADRAS PRESIDENCY.

HISTORICAL SKETCH.

The history of cattle murrain in the Madras Presidency is peculiarly interesting, because of the early notices which exist regarding cattle plagues; because in recent times the Madras Government took the initiative in investigating the subject, and stimulated an interest in the matter which has borne abundant fruits in other parts of India; because here a skilled agency was first employed to inquire into the subject and devise measures for the prevention and treatment of disease causing mortality among cattle; because a legislative enactment was devised for these purposes; and because, after three years' experience and continued attention to the subject by professional men and district officers, the application of the enactment so devised was authoritatively declared to be neither "expedient nor necessary," and the stamping out, limitation, and treatment of murrains were entrusted to the knowledge, the personal efforts, and influence of individuals.

These several points will be more fully brought out in the following remarks, which have designedly been made as brief as is consistent with clearness.

1791-92. In 1791-92, severe murrain broke out among the cattle with the Army of Lord Cornwallis at Bunjator and Seringapatam. This fact is mentioned in a report by Dr. J. MacRae, dated 11th November 1868, appended to Dr. C. Macnamara's work on Cholera.

1811. In 1811 cattle disease prevailed among the cattle of the depôt at Hoonsoor. It appears from the printed records (Selections from the Records of the Government of India, Home Department, No. 69) that murrain was very destructive in Mysore in that year. In order to prevent the infection of the reserve cattle, these were parcelled out into small portions, separated and distributed over the neighbouring pastures, while cattle returning from command were kept in quarantine. These measures, no doubt, saved a great number of the Government stock. Colonel John Hill, Commissary General, in reporting on the subject generally, states that "every means should be used to prevent the spread of the disease; *healthy cattle should, if possible, be moved from the neighbourhood of infected localities:* this proved particularly successful in Mysore, when the Amrut Mehal was in existence; and in seasons of sickness, when the casualties among private cattle which were not moved were counted by thousands, the Government herds very frequently escaped unscathed." The words italicised contain the principle of all that has been attempted in Madras for the prevention and limitation of cattle murrain, with what success will appear in the sequel. The nature of the disease is very manifest from the following terse description by Captain Harvey, Assistant Commissary General:—"a purulent discharge from the nostrils, eyes, mouth, and ears, excoriating and ulcerating the parts, and a violent diarrhœa." Lieutenant M. Curbon calls it a "violent dysentery." The disease was no doubt rinderpest. While the cattle in the depôt remained comparatively healthy, detachments for Bellary, Chittledoorg, Nundidoorg and Rayacottah, passing through affected places, were so severely seized that some of them were unable to proceed. This disease is called *burra azar*, or the great disease. Captain Harvey considers it to be the same as the "malignant epidemic fever which has so frequently ravaged the herds of the Continent of Europe." Stimulants, nutrition, and local disinfectants and astrir nts seem to have been the chief means of cure employed, and a heavy fall of rain appears to have put a stop to the disease.

HISTORICAL SKETCH.

1848. In the year 1848 Dr. William Gilchrist published his "Practical Treatise" on the diseases of cattle, elephants, and camels. This excellent work was founded on personal observation and study at the Hoonsoor Cattle Farm, and has been, up to this time, a standard work of reference with Commissariat and Ordnance Officers, and others in charge of public stock. Murrain and foot and mouth disease hold a very prominent place in the category of cattle diseases, and the former is also described as one of the diseases to which camels are liable. Dr. Gilchrist's description of these diseases is reprinted below, and it is evident that the affection which he describes under the term 'murrain' is none other than that which has been so prominent in the preceding pages, and regarding which later experience has taught the same conclusion as was arrived at by Dr. Gilchrist, namely, that it is identical with the murrain of Europe.

1852. The next notice of murrain is also from the training depôt at Hoonsoor. The disease is said to be the same as that described by Captain Harvey in 1811, and the same treatment, namely, frequent injections of a solution of sugar of lead into the nose and ears, applying alum water to ulcerated parts, and the use of camphorated oil, was employed "with the best results."

1863 In July 1863 Captain T. Nelson writes to the Collector of Kurnool, describing a murrain which had prevailed in that district during the preceding three months, and had carried off hundreds of cattle. He states that this murrain reduced herds by half, and describes as the symptoms,—refusal of food, ears drooping, eyes watering, purging, succeeded by a bloody flux, an eruption of large pustules covering the whole body, and death between the 5th and 10th days. He proposes *inoculation* as a protective measure. This letter is forwarded by Mr. J. Minchin, Collector of Kurnool, to the Board of Revenue, with a remark that "the disease is the cause of enormous losses to the agriculturists throughout the Presidency, and recommends the institution of experiments to test the value of inoculation. The Board of Revenue transmit the papers to Government, the Inspector General of Hospitals, and the Commissary General, and note "the serious diminution of stock which was brought to light by the last quinquennial returns." They "feel that the matter is not ripe for action," and suggest *Local Committees* of Medical, Commissariat, and Revenue Officers to collect and digest facts, and consider and propose remedies.

This latter important proposal has not been so frequently adopted as it ought; but the advantages of the measures are very apparent from the excellent results of the Benares Committee in 1869 (see Appendix, p. 348), which threw such light on the nature and origin of the disease raging in that station and district.

The Madras Government request the Commissary General to report whether similar disease has ever appeared at Hoonsoor. The result is given above. They also move the other Governments in India to inquire into the matter and consult the Medical Department as to inoculation, which, they consider, should be made the subject of experiment.

Later in the year (November) Assistant Surgeon G. Bidie, M. D., informs the Deputy Commissary General that the disease described by Captain Nelson is the *doddah rogah* or *burra azar*, "well known in Western Mysore—very fatal—destroying nearly all the stock in a village." He also states that the natives on its appearance adopt means of segregation, keeping their cattle away from attacked villages. He says that the causes are quite unknown, that the murrain is most virulent in the hot weather, and that fatigue, insufficient food or water, and whatever reduces the vital powers, predispose to an attack. The symptoms described are those characteristic of rinderpest; he notes that the body may, in advanced stages, become covered with pustules, and considers the murrain more like plague than small-pox.

The treatment he recommends is,—slight laxatives in early stages, and salines, cordials, and sedative astringents as the disease advances. He regards inoculation as dangerous, tending to increase rather than diminish the ravages of the disease.

1864. The Government now appoint Veterinary Surgeon J. Thacker to investigate and report upon the disease, and Mr. Thacker contributes a valuable series of reports upon the nature and prevalence of murrain in this Presidency, and the measures adopted to check it, upon which the following remarks are founded. Mr. Thacker in the first instance visited the Kurnool District, and from January to April was employed in investigating the disease there, and applying remedies and measures to cure the sick and prevent the spread of the disease. His report, which appears to have been written in May, is full and interesting. The following are in short the main facts and considerations contained in it:—Mr. Thacker found the murrain at Boodacherla and Ravypad, in the Kurnool District, where he had abundant opportunities of studying it. The disease was called *pedda moosa rogum*. Mr. Thacker was confirmed in his opinion of its identity with the murrain of Europe. His description leaves no doubt on that point. He notes that he did not find the exanthematous or eruptive form of the murrain prevailing, and that this variety occurred during or after the rainy season. He found that without personal support from the civil authorities he could do little in the way of inducing the people to submit to any rules for treatment or prevention. He saved 33 out of 44 cases treated at Ravypad (75 per cent.). He prescribed the simple bazaar drugs easily procurable by the people,—camphor, nitre, opium, catechu, and datura, and places great stress on the continuous administration of nourishing gruel. He can assign no cause for the disease, but considers it infectious; this is acknowledged by the natives, but they take no means whatever to separate sick and heathy. He recommends cleanliness, disinfection, segregation, isolation of sick, and treatment. As to inoculation, he considers that it would only propagate a dangerous disease. He finally recommends the employment of a qualified officer to interest the ryots in treating the malady, and see that necessary measures are carried out.

The Collector of Kurnool, in forwarding the report to the Board of Revenue, is sanguine as to the success of medical treatment, and states that he intends translating, printing, and circulating widely Mr. Thacker's directions for treatment, &c. He thinks that nothing short of a special legal enactment will ensure the application of preventive and sanitary measures, in which he places his chief trust. He proposes an Act providing for the erection of hospital sheds, the cure of the sick, early report of disease under penalty, and disinfection of infected premises. He would have breaches of the Act made punishable under Sections 269 and 270, Indian Penal Code, and the Act made, not compulsory, but capable of application on the requisition of the local authorities. He estimates the yearly loss of cattle in the Kurnool District from murrain at 2,000. He supports the proposal to employ a qualified man for the special duty of repressing and treating cattle disease, and would place a staff of pupils under him to acquire veterinary knowledge.

The Board, in forwarding the above to Government, concur in the opinion as to the necessity of legislative action.

In June 1864 Mr. W. G. MacIvor, Superintendent of the Government Cinchona Plantations, sends a careful report of murrain which raged in the Nilgherry Hills to the Collector of Coimbatore. This report leaves no doubt that this murrain was a severe form of rinderpest,—an opinion recorded by Mr. Thacker in a letter dated 12th July 1864. The Madras Government, in considering these papers, receive the proposal to legislate favourably and ask the Board to submit a draft, approve of Mr. Thacker's special employment, and wish to have inoculation tested.

HISTORICAL SKETCH.

In June of this year Dr. Shortt described a disease of sheep, in which swelling under the jaw was the most prominent early symptom; and if the animals recovered from this, purging supervened on the 5th day, and death was the invariable result. He found no "flukes" in the animals examined; he attributed the disease to diet, and found that the only animals which escaped were fed on grain food. He recommends change of diet and salt, and considers the disease infectious. He also notes the prevalence of *komari*, or epizöotic aphtha, among the cattle in the district (Coimbatore).

1865.

Mr. MacIvor reports further in July 1864 that rinderpest broke out on the hill in August 1863, and proved most virulent, not more than 2 per cent. recovering. He shows by personal experience *the superior efficacy of removing the healthy to removing the sick, as a sanitary measure.* In this opinion Mr. Thacker concurs, pointing out at the same time the greater trouble and inconvenience of the former proceeding. The next notice of murrain is also from the hills. Mr. J. Anderson, Assistant Apothecary, Lawrence Asylum Works, Loredah, gives a most interesting account of an outbreak of rinderpest which took place in the months of July and August. The disease was imported from the plains by cattle which had been sent down to Coimbatore to fetch machinery. One of *these* was attacked eight days after their return, and thirteen others of the same lot were subsequently seized. Of the first five animals attacked, four died and only one recovered. Mr. Thacker's published directions for treatment were then adopted, and of thirteen attacked, four were saved in the early stage by the administration of slight laxatives and gruel, and eight were saved after diarrhœa had set in by giving camphor, datura, nitre, chiretta, and arrack in *suji* gruel; only one old, debilitated animal died. Mr. Thacker, in forwarding this report to the Collector of Coimbatore, states that the native cattle owners, on the outbreak of this disease, "immediately drove away their cattle many miles distant."

The Collector of Coimbatore forwards these papers to the Board of Revenue, and remarks that a good many cattle had died on the hills from the effects of sore-throat.

1866.

Cattle disease (rinderpest) is next reported from Mudumallai and Munsicoil in the Sigur Valley among the cattle belonging to the Forest Department. The disease broke out on the 24th December 1865, and out of 150 bullocks, 31 were attacked, 12 died, and 19 recovered. The treatment pursued was similar to that adopted by Mr. Thacker, —chlorate of potash and gruel being given in the early stages, and opium and gruel in the later.

Mr. Thacker's next report is dated 2nd March 1866. He obtained personal experience of the disease in January at Ootacamund, and was confirmed in his opinion that it was the true rinderpest of Europe. He found also that the herds on the Nilgherry Hills had been periodically attacked with it, but that no definite information was to be obtained. The oral testimony of the inhabitants was to the effect that the disease was not known on the hills until Ootacamund became a European settlement. He ascertained that the Todas and Badaghars (hill tribes) established a vigorous quarantine on its appearance, and broke up their herds into detachments. They considered medical treatment of no avail, and declined it. He next details the causes, symptoms, and pathological appearances of the disease at length. These accord closely with the observations of this Commission. He gives a striking illustration of the contagiousness of the disease; under treatment, he cannot advise vaccination for want of experimental proof of its value. He inoculated three animals with rinderpest, two of which died, and while desiderating further trials, adheres to his previously recorded opinion as to the danger of disseminating the disease by this proceeding. He considers segregation an established rule, and prescribes the treatment previously advised. In conclusion, he advocates the employment of a special agency and legislation on occasions of outbreaks;

the breaking up of herds into detachments; scrupulous segregation; cleanliness; *disuse of cowdung;* and burial with hides on. HISTORICAL SKETCH

In May of this year Dr. Shortt submitted another report on cattle disease which prevailed in Mangalore and Yercand on the Shevaroy Hills in April 1866.

He found that the disease was called *ummay* or small-pox, and describes most accurately the symptoms and *post-mortem* appearances of rinderpest from a careful examination of living and dead animals. He notes the ulcerated condition of the mucous membrane of the mouth and the congestion of the skin, and subcutaneous tissue causing a rough feeling of the skin. Dr. Shortt concludes that the disease so carefully observed by him is rinderpest. He found the mortality in two herds of 80 and 103 head of cattle to be 27·5 and 32·03 per cent. He noted the spread of the disease by means of common pasture grounds, and that a smart shower of rain seemed to put a stop to it. He also describes in Yercand another most important disease of cattle causing death, namely, hydatid cysts in the livers and lungs, causing emaciation, debility, and death. He attributes this condition to a bad system of feeding, and notes the case of one coffee plantation on which the cattle fed on the leaves of lime, orange, and pomelo trees, and were free of entozoa. Mr. Thacker's next report is dated 18th September 1866; he describes an outbreak of *tondinow* or malignant sore-throat in some villages of the Nilgherry Hills in May, and attributes it to cattle feeding on swampy pasture, owing to the unusual drought succeeding the early rain. The same disease, we are informed in a subsequent report, called also *domma pegooloo* (Telugu), broke out in the Kurnool District in December 1866. Mr. Thacker gives a careful description of it, and advises separation and change of pasture. He places little reliance on medical treatment. In December also, he describes a severe outbreak of foot and mouth disease (*kala jarah* and *bayi jarah*) at Kendal, near Ootacamund, which forms an exact parallel to the experience of the Commission at Darjeeling. The mortality was very great (14 per cent.), owing to the owners of cattle employing sick animals for work, because of the scarcity in the number of these required for draught purposes. He next gives particulars of an outbreak of rinderpest in Bellary and Kurnool in May and June. He obtained 48·27 per cent. of recoveries against 33·3 before his arrival. The healthy cattle were picketed out in detachments 200 yards distant from each other, a quarter of a mile away from the sick, and the effect was to "modify the type, and eventually exterminate the disease." Reports of cattle disease were received from South Arcot (rinderpest) and North Arcot (*nulli*—nature unknown).

This year is signalized by the passing of an Act (II of 1866) in the Madras Council for the prevention of the spread of cattle disease in the Madras Presidency. The application of the provisions of this Act is placed in the power of the Governor in Council. It provides for the establishment of *hospital pounds* under direction of the Magistrate of the District; inculcates, under penalty, the duty of the owner to report to the pound-keeper attack by contagious disease; directs the pound-keeper to examine the animal, order its removal to the hospital pound, and the disinfection of the shed in which it was kept; gives this official power to examine and inspect suspected animals and contaminated premises, and act as circumstances demand; provides that the expense of food and treatment may be defrayed by the Pound Fund or owner; gives the pound-keeper power to destroy diseased animals when advisable; directs burial, and does not admit compensation; renders the levy of fees for care and treatment lawful, and sale of the animal to realize them; prohibits the removal of diseased or suspected animals without a license from the pound-keeper; attaches a penalty to disobedience of the pound-keeper's orders, or opposing the seizure of cattle under the Act; provides a remedy for illegal or improper seizure; places fees and fines to the credit of the Cattle Pound Fund; and gives the Governor in Council power to enact bye-laws more effectually to prevent the spread of disease.

HISTORICAL SKETCH.

Mr. Thacker next reports (26th March 1867) on an outbreak of *vekkai* (rinderpest) in the North Arcot District, which commenced 12th December 1866. He resorted to the system of picketing healthy cattle out in detachments, and found the villagers willing to adopt this measure. To this system he attaches great importance, and suggests that the Cattle Plague Act should not be applied to the district. He continues the same method of treatment, and records a most striking fact with regard to the advantage of careful dieting. "I find that the cattle of the six prior villages have died to a larger extent, as of 300 attacked, 250 died and 50 only recovered; whereas in the village of Pallaveram, of 128 attacked, 65 recovered. Such a striking contrast I find to have arisen from the care and attention of the latter village people, having saved them by daily administering quantities of gruel."

1867.

In April Mr. Thacker found that the measure of segregation adopted at Pallaveram had "resulted in the extinction of the disease." He found the disease prevailing in other villages of the North Arcot District, and put in practice the same methods of sanitary and medical treatment, of whose success he writes in a very sanguine manner.

The next report is dated 12th September 1867. Mr. Thacker was informed of the existence of rinderpest in Conjeveram, Madras District, but failed to see the disease, which had subsided before his arrival. Cattle disease was reported from Trichinopoli (fever of a typhoid kind), from Bellary, and from Coimbatore. He visited, Coonoor and found that cattle were dying from an impoverished condition, probably caused by a deficiency of salt, and ameliorated by an increased supply of it. He found rinderpest (*vekkai*) prevailing at Pulloor, in the Madras District, and again put in practice, with success, the methods of segregation and treatment above described. The District of Cuddapah was next visited, where many deaths had occurred from *saraku*, apparently a kind of rinderpest, and the usual plan of treatment advised. *Vekkai* (rinderpest) was found in another village of North Arcot; and at Kongiem, in the Coimbatore District, cattle and sheep were found suffering from an enzöotic fever, owing to local and climatic causes, called *alari-novoo*. Another disease, *goonda-musara*, was reported from Cuddapah, but its nature does not appear. From Nellore the prevalence of seven different species of cattle disease was reported, among which Mr. Thacker was able to identify rinderpest, foot and mouth disease, and malignant sore-throat, and advised accordingly. Mr. Thacker's attention was next drawn to an epizöotic among Government camels at Bangalore, which turned out to be caused by hydatids. He was next called to Coimbatore, where he found rinderpest (*kudinow* or *pytchinow*) raging in several villages, Kaity, Malleada, Kandal, &c. He found that the cattle of Kaity had caught the disease from an infected pasture, and gives an instance of a herd of 40 escaping the murrain by being separated and isolated. He recommends the continued employment of a Veterinary Surgeon, and remarks on the various types which the disease is apt to assume from variations of climate. In a letter to the Collector of Coimbatore, Mr. Thacker details measures by which rinderpest was stamped out among a herd of 50 buffaloes, by their being placed in isolated kraals. The Board of Revenue and Madras Government accept these reports as satisfactory, approve of his continued employment, and request him to prepare a simple manual on the subject of cattle diseases in the Presidency, and their treatment.

Mr. Thacker's next report is dated 9th September 1868. He gives a narrative of the reports of cattle disease submitted to him, and his personal experience in localities visited by him; but as the paper is curiously void of dates, it is difficult to know when the outbreaks described occurred. He finds very virulent rinderpest on the Nilgherries, and once again confirms the propriety of segregating. At Kotergherry and Coonoor segregation and treatment were again adopted with apparent success. At Hoonsoor an outbreak of *burra azar* was reported, but ceased before Mr. Thacker arrived. He then visited North Arcot, and found rinderpest

1868.

(*vekkai*) prevailing there. A most instructive instance is noted of disease having broken out afresh, in consequence of measures for isolation having been relaxed. Rinderpest was also reported from the Cuddapah District. Coimbatore was again visited, and rinderpest found prevailing. His attention was next drawn to the Madras District, where segregation and treatment were again adopted with apparent success. Disease continued to be reported from Salem, Coimbatore, North and South Arcot, and Cuddapah Districts, and an outbreak of foot and mouth disease occurred at Bangalore without any casualties.

In addition, reports of rinderpest were received from South Canara, Secundrabad, and Bellary, and of foot and mouth disease from the Salem District; from the Kistna and Kurnool Districts reports were received and medicines and instructions supplied. Mr. Thacker, in conclusion, insists upon the benefits of segregation, stating that, when carried out according to his instructions, he has never seen it fail. He defines the system as consisting in separating the healthy cattle into detachments picketed at 300 yards from the village and 200 yards distant from each other, treating the sick in the village and continuing the segregation for 15 days after cessation of disease. He states that the people have confidence in his medicine, and promises a manual.

Mr. Thacker's next report is dated 27th April 1869. In September 1868 he proceeded to Malabar, but found that cattle disease had ceased there. Disease was again reported from North Arcot and Kurnool. Rinderpest prevailed in October and November around the Sheveroy Hills and on the Nilgherries; at Yercand cases of black quarter, called *chuppaniovu* or *thaloreenovu*, (Tamil) occurred. In December rinderpest prevailed in the Salem District, and outbreaks were then traced to animals purchased at markets. Reports were meantime received from Kurnool, Malabar, North Arcot, South Canara, and the Nilgherries.

1869. In January Mr. Thacker visited the Kistna District, where he found rinderpest, but experienced some difficulty in getting his plan of segregation carried out. On his return to Madras he received reports of cattle disease from Kurnool, Coimbatore, and South Canara, and saw rinderpest in North Arcot and Coimbatore, in which latter place he found that his instructions had been carried out with gratifying success. Appended to this paper is a report from the Head Assistant Collector, Kistna District, showing the difficulties and advantages of Mr. Thacker's plan of segregation, and recommending the Act to be amended accordingly, but that the system, for success, should be carried out under efficient supervision. As to the advisability of applying the Act, the Collector of North Arcot earnestly deprecates the measure; the Collector of Coimbatore does not consider the introduction of the Act necessary, and considers that the people are ready to carry out measures for segregation and treatment; the Board of Revenue "recommend Government to continue the measures now in operation with so much success, in preference to appealing to the Legislature," and Government decide (24th June 1869) that the introduction of the Cattle Disease Act, or any similar enactment, is not called for at present.

Mr. Thacker's next report is dated 1st October 1869. Cattle disease was reported from Kurnool, Salem, Bellary, Nellore, North and South Arcot, South Canara, Malabar, and the Nilgherry Hills. Medicine was liberally supplied and segregation practised—in some instances with signal success. It is somewhat difficult from Mr. Thacker's, in many cases, giving local names of villages and talooks without indicating the district, and giving the vernacular name of the disease without explaining the symptoms or English synonym, to give a very clear summary of the information contained in this report; but it is manifest that attention was generally directed to cattle diseases throughout the Presidency; that much rinderpest prevailed all over it, and that measures of treatment and segregation were applied with energy and gratifying result.

As an illustration of its appreciation by the people, the Board quote the instance of a herd of buffaloes which was attacked with murrain near Kotagherry,

HISTORICAL SKETCH. where Mr. Thacker found that the people who had formerly been instructed in the system of segregation "had already adopted it; the healthy cattle had been removed, and the disease soon ceased." Disease also prevailed in Mysore during the official year 1869-70. The mortality is put down at 23,907 head, and the loss, at Rs. 20 per head, Rs. 4,78,140. The murrain is called *dod rogue*, and prevailed throughout the Hassan District of the Ashtagram Division. The symptoms of rinderpest are correctly given, and foot and mouth disease is also said to be very common. The next report from Mr. Thacker is dated 31st March 1870. Up to the end of 1869 his attention was principally drawn to Kurnool, Malabar, and Kandal on the Nilgherries.

In January 1870 murrain continued to rage in Malabar, South Kanara, and Kurnool.

The District of Nellore was visited and cattle treated with favorable results; but the people were averse to carrying out segregation as strictly as they were instructed, and the disease consequently lingered on. In another part of the district, however, they had voluntarily adopted the system, together with burial of carcasses without removing the hides, and this was followed by "marked success" in staying the progress of the disease. Subsequently murrain was reported from Kurnool, South Canara, North Arcot, Salem, and Bellary, and treated on the same principles. Government note, in commenting on this report, that the treatment employed has been generally successful, and the people are beginning to see the wholesome results of segregation.

1870.

A later report, dated 14th November 1870, for the half-year ending 30th September, details the prevalence of cattle disease in Malabar, Canara, the Nilgherries, Cuddapah, Bellary, Kurnool, Madura, Secundrabad, and Salem. The same principles of segregation, parcelling out herds, and treatment were adopted, and in all instances, when the plan was carefully carried out, with success. Mr. Thacker writes: "Segregation has been, whenever adopted, invariably successful in stopping outbreaks of disease. It is a preventive measure of incalculable value to the country. It would save the lives of thousands of cattle, and I exceedingly regret that, under present circumstances, it cannot at all times be carried out."

The general inferences to be drawn from the experience in Madras are—

1. That rinderpest, known most commonly by the names *vekkai*, *ummai*, *burra azar*, *doddah rogue*, *kudinow*, *saraku*, &c., is a well-known and widespread disease in the Presidency, and has prevailed extensively since inquiries began to be made into the subject.

2. That foot and mouth disease, swelled throat, black quarter, and cystic disease are also common forms of cattle sickness.

3. That for the prevention and treatment of rinderpest strict segregation and medical treatment have been found successful.

4. That the separating of the healthy is better than removing the sick.

5. That by carefully conducted segregative methods the disease may be effectually limited to a certain locality or number of cattle, and its further spread prevented.

6. That by suitable dieting and careful medical treatment a certain number of animals recover more than if they were left to nature.

7. That any legislative interference is considered strongly unadvisable in the Presidency, after careful and anxious attention has been bestowed upon the subject.

8. That by persuasion, example, and personal influence the people may be brought to adopt the necessary measures of prevention and treatment.

9. That the plan of protecting cattle by inoculation has not been entertained favorably, and all the thought and action adopted has tended to the opposite aim, namely, repression or stamping out. HISTORICAL SKETCH.

A letter and narrative from Mr. Thacker, summarising his observations and experience in Madras, are printed below.

Extract from DR. W. GILCHRIST'S *Practical Treatise,—Hoonsoor*, 1848. Dr. W. Gilchrist.

SECTION 7.—MURRAIN OR EPIDEMIC DISEASE.

Burra Azar, HIND. ; *Perriah Novoo*, TAM. ; *Dhodrogah*, CAN.

History.—Of all diseases to which the bullock is subject, *burra* or *budda azar* is much the most important. It is the murrain of Europe, and during the epidemic visitation occasions as extensive a mortality amongst the herds of Asia as amongst those of the Western World. It may occur at any season, no one part of the year being more influential than another for its development.

Nature of the disease.—The interior side of the chest and of the abdomen, the inside of the skull and of the spine, the mouth, the nostrils, throat, the stomach and the intestines are all lined with membranes. The membranes lining the first four of the above named parts are of the kind called serous; those lining the last five named parts are of the kind called mucous. The nature of *burra azar* is an inflammation of one or more of these membranes, and the individual case of attack will vary, both as to symptoms and to severity, according to the kind of membrane and its situation, which is the seat of disease, as will be subsequently specifically detailed.

General symptoms.—These are,—drooping of the ears, which are cold, the hair on the body standing out as if it were on end; the animal is heavy and listless, and ceases to graze; the urine is scanty and reddish coloured; the pulse is quick, and is either weak or strong according to the kind of individual attack. A further stage of development of the disease occasions running at the nose and eyes, soon after which the symptoms indicative of the particular seat of the disease appear.

Particular symptoms. 1*st.*—If the membranes of the skull and spine be the seat of attack, the animal evinces symptoms of madness. The eyes are prominent and fiery, and from these organs, as also from the nose, there is much discharge, which is at first clear and watery, afterwards thick and yellowish coloured. The whole demeanour of the animal is one of madness, running about in a wild manner and attempting to attack the attendants. Sooner or later these symptoms give place to those of an apoplectic character—*vide* Chapter I, Section 3. The animal falls down, commences a snoring breathing, is little, if at all, sensible, and dies.

The epidemic of horned cattle is usually most severe at the commencement. It accordingly frequently happens at the outbreak of the epidemic seizure that this apoplectic state supervenes within a few hours after the attack, not being preceded by the madness above alluded to, and indeed by few or none of the general symptoms, except leaving off grazing and drooping and coldness of the ears. The animal is frequently so speedily overpowered by the disease, that it dies within two or three hours with well-defined symptoms of apoplexy. After ten days or a fortnight's continuance of the epidemic, this variety does not prove so rapidly fatal; the animal may continue in an insensible state with snoring breathing for two or even three days, but this variety, whether running its course speedily or more slowly, is generally fatal, and is almost certain to be so if early treatment be not adopted. Dissection most clearly indicates the cause of death, which results from fluid, more or less bloody, being secreted within the skull and making fatal pressure on the vital organ within, the brain, which is itself, as also its membranes, more or less inflamed. In the more protracted cases of this variety, the discharge from the nostrils consists of mucus mixed with blood, and is very fœtid, attracting flies, which deposit eggs that become maggots in the space of a few hours.

2*nd. Chest and Lungs.*—When the membranes of the chest and lungs are the seat of the disease, there is cough and rapid breathing.

3*rd. Bowels.*—When the mucous membranes of the bowels are affected, the evacuations are loose and mixed with slime and blood; not infrequently, however, there is frequent watery purging with little slime, though the evacuations are very fœtid. Sometimes the dung is hard at the commencement, dark coloured, and offensive. When the costive state of the bowels, just spoken of is conjoined with the affection of the head above alluded to, the name *buttee azar* is sometimes given to that variety of attack, also the name *bhao*. The cysts described under *dhoobla—vide* Chapter I, Section 6—are found occasionally in the lungs or liver of animals that have died of *burra azar*; but such cysts are in no way an essential condition of this epidemic.

Dr. W. Gilchrist.

It is not to be understood, however, that cases so completely insulated, as stated in the above history, are the ordinary manifestation of the disease, which is thus sub-divided for facility of description. On the contrary, few cases occur which do not exhibit a combination, more or less extensive, of the above symptoms, and the progress of the epidemic from outbreak to decline usually observes the order of symptoms above given, shading gradually from one group of symptoms into the other.

The causes, whether predisposing or immediate, of this epidemic are unknown. The ordinary condition of the seasons appears to have little influence over it, as it occurs equally frequent during all seasons. The theory of the natives as to the cause is, as might be expected, based on the most crude superstition apart from religious ideas; the only circumstance I have known them to name as productive of it is that of a tiger having urined in the vicinity of the herd.

[The treatment recommended by Dr. Gilchrist consists of firing, bleeding, aperients, fomentations, and warm nutritive and stimulant drenches.]

Section 5.—Epidemic Affection of the Mouth and Feet.

Moopaung, Hind.; *Comaree*, Tam.; *Baheejerrah*, Can.

History.—This is another epidemic affection to which horned cattle are subject, and one which is not usually of serious importance in itself, but which, from neglect on the part of the attendants, may become one of considerable mischief, and even occasion death.

Moopaung consists of a vesicular eruption of the lining membrane of the mouth and nostrils, and also of that portion of the skin of the legs immediately above the hoof, as also of that between the hoofs. The animal on seizure becomes listless and leaves off grazing, apparently from tenderness of the mouth. After the lapse of three days there appears a running from the nose; the lower part of the legs swells, and little bladders or vesicles are found immediately above the hoofs.

About the fifth day from seizure these vesicles become small ulcers, which are to be seen on the tongue and inside of the mouth; the same also appears in the nostrils and above and between the hoofs. The animal walks limpingly. The general functions of the system are little, if at all, sensibly disturbed; but if the animal be neglected, maggots appear in the nostrils and about the feet. The foul ulcers resulting may produce permanent lameness or death from mortification within the nostrils.

Treatment.—Camphoretted oil applied to the nostrils and feet speedily effects a cure, being curative as a means, while it prevents flies from depositing ova which speedily turn to maggots. The native treatment consists in causing the cattle to stand in soft mud; flies are thereby prevented access to the feet, and so far well, but the nostrils continue undefended. The application of camphoreted oil, consisting of camphor eight tolas, dissolved in a quart bottleful of cocoanut oil, meets every requisite, and effects a speedy cure.

The following is an extract from a topographical report by Staff Surgeon G. B. MacDonell, which describes a variety of *moopaung* as it appeared in the Tenasserim Provinces in 1839:—

"The last warm season was considered unusually hot, and with it the cattle which came down in March brought with them a disease which spread extensively among the Moulmein cattle and proved exceedingly destructive. It appears that this epidemic was present in the Shan country, and very destructive; and as it abated there, it became apparent on the coast and it is very doubtful whether it could be considered infectious.

"It is more rational to attribute it to some hidden epidemic constitution of the atmosphere having the same laws as other epidemics, than to contagion; the cattle in the town were in no way exposed to contact with the Shan cattle, and were, moreover, in excellent condition, while the others were thin from long travel, yet all suffered.

"It showed itself in a most insidious manner, and to the inexperienced eye was not obvious; but the cattle drivers in their diagnosis were always right. At first the animal appeared dull, then the feet between the hoofs were seen to swell, and the heels became spongy; next the breath was observed to be offensive, the gums became spongy, and the mouth poured out a frothy discharge; at this stage the feet became much diseased, the toes extended, the foot swelled, and the animal could hardly walk; emaciation gradually came on; the animal appeared never to lose its appetite, but was prevented from feeding by the state of its gums; the bowels were generally confined, and the pulse quick; the disease in the course of three weeks from its first commencement generally proved fatal. From this disease some 700 or 800 head of cattle died.

"To ascertain the effects of the disease, a series of *post-mortem* examinations was instituted; and save in a few instances, which showed ulceration and softening of the mucous membrane of the stomach, the disease might be called bronchitis, extending to the substance of the lungs. From this view of the subject, the treatment I suggested was to bleed copiously, in the first instance, to relieve the bowels with Glauber salts and tartar emetic."

SECTION 15.—EPIDEMIC AFFECTION OF THE CAMEL.

Pupday, Papedah, Papesa Ka Murza, Budda Bhao, Bhao, Ahren Bhao, Pakdar.—The first six of these terms are in common use in Peninsular India, as well to indicate occasional individual attacks of the ailments described under those heads—*vide* Chapter II, Sections 2 and 12—as to indicate the same affections when prevailing epidemically. The seventh term is the Bengalee name for the variety of *Papesa Ka Murza* when prevailing epidemically.

History.—The *Budda Azar* (the murrain of Europe) is described in Part III, Chapter I, Section 7—an epidemic affection to which the bullock is subject. That the camel is subject to a similar disease has been satisfactorily determined, and indeed it has prevailed to a considerable extent amongst the camels of the Public Cattle Establishment during the current year (1848). The serous and mucous membranes of the head, lungs, and bowels are the seats of the affection. The lungs and air passages are the most commonly affected; and for the purpose of description and for giving a convenient view of the symptoms of the epidemic, these may be stated under distinct heads; but it will be readily understood that during an epidemic seizure, some only of the symptoms named will show themselves; while, on the other hand, cases will present themselves in which the varieties shade one into the other, as, for instance, one case may show more symptoms of affection of the head than that of the lungs or bowels, another more derangement of the lungs, a third may show symptoms of more or less affection of the abdominal organs.

First,—Head.—When the membranes enveloping the brain are affected, the symptoms detailed under the head of *Bhao Ka Murza* are developed—*vide* Chapter II, Section 2. During the existence of inflammation of the brains and its membranes, called by the Serwans *Ahren Bhao,* the animal shows prominent symptoms of delirium, attempts to bite the attendants and to get loose, and has altogether a wild demeanour, which sooner or later, however, abates; the animal falls down, breathes stertorously for a time, and dies. On some occasions the apoplectic symptoms set in almost at the commencement of the attack; the animal is lethargic; it has a confused demeanour, walking round and round its picket; attempts to lie down, but does not carry its intention into effect. At length the lethargic symptoms increase, the animal lies down heavily, breathes stertorously, and dies from marked symptoms of effusion within the skull, producing fatal pressure on the brain. This is the *Bhao* of the Serwans—*vide* Chapter II, Section 2.

Second,—Membranes lining the nostrils, throat, air passages, and lungs.—When the nostrils are affected, the mucus secreted by the lining membrane of those passages assumes a thicker consistency and yellow colour, and the animal frequently rubs its nose against the ground, post, or wall. It is restless, and makes the guttural sound indicative of uneasiness—*vide Koodkay* or *Surdhee,* Chapter II, Section 11.

When the lining membrane of the pharynx, or top of the throat, is affected, this part, as also the uvula, is red and swollen—*vide Choodee,* Section 4, and *Gahasha,* Section 5, of Chapter II. There is difficulty of swallowing, and the animal shows unmistakeable signs of tenderness in these parts when pressure over them is made.

The symptoms that indicate affection of the wind-pipe and lungs are detailed under *Papesa Ka Murz—vide* Chapter II, Section 12.

Third.—When the bowels are affected there is usually watery purging, the evacuations being very fœtid, and frequently mixed with slime, sometimes with blood. The belly is swollen; there is great rumbling of the bowels, the tongue is pale and dry; the animal is pale and restless and leaves off eating. Dissection shows either effusion on the brain, inflammation of the lungs, sanguineous engorgement of those organs, or inflammation and thickening of the bowels, according to the seat of the attack.

J. H. B. Hallen, Esq. *From* J. H. B. HALLEN, Esq., *President, Cattle Plague Commission, to the Secretary to the Government of India, Home Department,*—(*No.* 372, *dated Sahibgunge, the* 14*th June* 1870).

The Commission, with a view of making their inquiry into the subject of cattle murrains, past and present, as complete as possible, are anxious to obtain information on the points noted below from Bombay, Madras, Central Provinces, and British Burmah; but as these places are not within the sphere of their inquiry, I should deem it a favor if you would, with the permission of His Excellency the Governor General in Council, address the Governments of the two Presidencies and the two Chief Commissioners in the matter, and request them to have the information required forwarded to me at No. 1, Sudder Street, Calcutta.

1*st.*—Has any disease of an epizöotic nature prevailed among the cattle in any part of the Presidency of Bombay, Madras, Central Provinces, or British Burmah? And is it now prevailing?

2*nd.*—Name of the disease as called by the natives of the country and the symptoms, also duration of the attack.

3*rd.*—*Post-mortem* appearances.

4*th.*—Name of the districts affected, their situation, and the nature of the soil.

5*th.*—Number of cattle attacked, number recovered, and number still ill.

J. Thacker, Esq. *From* J. THACKER, Esq., *Veterinary Surgeon, to the Acting Secretary to the Board of Revenue,*—(*dated Coonoor,* 5*th November* 1870).

In compliance with the request of the Board of Revenue, I have the honour to forward the information desired by the President of the Cattle Plague Commission in his letter to the Secretary to the Government of India, Home Department, dated Sahibgunge, 14th June 1870, No. 372.

2. REPLY No. 1.—Disease in an epizöotic form has prevailed among cattle in almost every Collectorate of this Presidency from as remote a period as can be ascertained. It still prevails at various seasons with greater or less virulence.

3. REPLY No. 2.—The names given to the disease by the natives of the country are *Pedda Moosa Rogum, Vekkai, Peria Novoo, Pytchinow, Dodda Rogum, Vasuri, Thukam,* &c.

4. SYMPTOMS—*First stage.*—The attack is insidious, making considerable progress before outward signs lead to a recognition of the complaint. The first marked sign is a peculiar twitching of the muscles of the front of the chest and lower part of the neck; the temperature of the body, observable by a clinical thermometer, rises to as high as 105°; the pulse at first is little disturbed, but with the development of the disease in this and the second stage it increases to 100° or more, becoming smaller and weaker in tone; the respiration is somewhat quickened; the appetite is but little affected during the first three or four days; there is dulness; a rough staring coat; drooping ears; slight congestion of the visible mucous membranes; bowels somewhat costive.

5. *Second stage.*—The appetite ceases; muzzle dry; visible mucous membranes highly congested; discharge of mucus from nostrils and eyes,—the latter has in it sometimes peculiar filamentous streaks of lymph; aphthous sores on the gums and lining of the lips; purging commences at first of an ordinary kind, but it soon assumes a characteristic offensive, putrid smell, is very watery, mixed with undigested food and streaks of mucus.

6. *Third stage.*—Great prostration, the animal mostly lying down; temperature of the body falls to sometimes as low as 88°; evacuations are mixed with blood, passed frequently in small quantities with great pain and straining; pulse rapid, and so weak as to be scarcely felt; surface of the body and extremities cold; eyes sunken; respiration quick.

7. The duration of the attack varies from five to ten days.

8. REPLY No. 3.—*Post-mortem* appearances. The pathological appearances are principally confined to the digestive mucous membrane; the lips and gums excoriated: the back part of the mouth, fauces, and pharynx present a dark-red congested appearance, with occasional ecchymosed spots and small superficial ulcers; the mucous membrane of the larynx has a similar appearance; the trachea is slightly heightened in colour, which gradually diminishes as it approaches the lungs. The œsophagus, rumen, and reticulum are healthy; the rumen is remarkably full of food, of a natural appearance; the omasum is full of hard dry food, but its structure is generally healthy; sometimes the mucous membrane peels off readily. The most striking character of the disease is in the abomasum, or true stomach, which presents in some places a dark purple appearance, and in others a dirty grey or brown, with small spots of black pigment scattered over its entire surface; here and there are patches of superficial ulceration, rather less than a quarter of an inch in diameter. The small intestines have a similar character; the anterior part or duodenum is similarly congested, and in addition has occasional

yellow patches of exuded lymph; these patches are attached by their centres to the mucous membrane, the circumference being loose; when removed the portion of the mucous membrane to which they have been attached is either highly congested or ulcerated; the jejunum is less affected. The ileum presents less general congestion, but is to a greater extent even than the duodenum covered with patches of exuded lymph, concealing ulceration; these increase in number as the cœcum is approached; they are quite superficial, in no case penetrating the mucous membrane; there are also at intervals patches of black discoloration surrounded by inflammatory congestion. The cœcum shows the ulceration in its greatest extent, almost its entire surface being covered with it; from this point it gradually diminishes, and the rectum is generally healthy. The liver is healthy; the gall-bladder is generally distended, and its mucous surface sometimes shows an appearance similar to that of the cœcum. The blood contains less fibrine than usual, being seldom found coagulated, except occasionally in the right ventricle; its colour is natural, and there is no perceptible diminution in the number of the blood corpuscles. Occasionally the serous membrane, lining the interior of the heart, is of a dull red colour with ecchymosed spots near the origin of the pulmonary artery; the portion of the pericardium lining the heart shows dark-red spots over its entire surface. The lungs are sometimes emphysematous.

9. Reply No. 4.—The disease has been confined to no particular district. It has existed more or less in all the Collectorates of this Presidency.

10. Reply No. 5.—Thousands of cattle are attacked annually. Many of these are treated with medicine distributed by me through the Revenue Officers, with an average of 50 per cent. of cures. Of 2,541 cases carefully watched and treated by myself, 1,763 recovered and 778 died, giving about 70 per cent. of cures. When the animals are left without any kind of treatment, the recoveries are not more than 10 or 20 per cent.

11. Several of my Reports to the Madras Government on Cattle Diseases I find have been selected and published in the Records of the Government of India, Home Department, No. 69. I, therefore, now venture to annex a simple narrative prepared for the ryots here, in the hope that it may not be without interest to the Commission, illustrating as it does the exceeding great advantages of the system of segregation. It has been invariably successful in preventing the spread of cattle epizöotic disease, and I beg most earnestly to commend it to the consideration of the Commission. It is simple, costless, and attended with little trouble. Were it thoroughly understood and carried out by the people, I feel confident it would be a priceless boon to the country.

A narrative account of Cattle Disease.

The losses sustained by the people of this country through cattle diseases have been enormous. In 1866 the Government, in the interests of the people, appointed an officer specially for the investigation of these diseases, with a view to ascertain the best mode of preventing and curing them. A manual of these has been published.

The chief disease to which I would refer, and which prevails throughout this part of India, is murrain. It is known to the people in different districts by various names, such as,—*Pedda Moosera Rogum, Vekkai, Peria Novoo, Dodda Rogum, Vasuri, Thukam*, &c.

Many thousands of cattle suffering under this disease have been cured by medicine distributed to the different Collectorates. In nearly 200 outbreaks it has been examined by me personally, and I have carefully watched and treated, through the different stages of the disease, 2,541 cases. Of these, 1,763 recovered and 778 died, showing only about 30 per cent. of casualties. When the animals are left without proper treatment, the deaths will amount to from 80 to 90 per cent.

The following are some of the ways in which this disease is propagated and carried about:—

On one occasion, when sickness had broken out in a herd of cattle, I advised the owner to remove the healthy animals. One of these was sent about 15 miles away, and unfortunately put in a herd of 120, all in apparent health. Within a fortnight 70 were attacked with murrain. The disease was thus communicated by this cow carrying in some way the infection about her, though she herself was never sick.

Fairs and markets are often the means by which the sickness is spread. Cattle are brought to them from infected villages or herds for sale, and thus the disease is conveyed to other places.

Another and very common way in which I have seen the disease propagated is by allowing healthy animals to graze on pasture grounds previously occupied by diseased cattle.

J. Thacker, Esq.

The very contagious nature of this disease is well known to the people of this country, but no effort is made towards prevention, and the isolation of sick animals is never attempted. I have seen a miserable buffalo calf, not worth five rupees, suffering under this disease in close contact with a healthy bullock, thus risking the life of an animal worth 100 rupees. Many more instances such as this might be related.

This is the more surprising when it has been seen what an invaluable preventive we have in segregation, so simple, so costless, and attended with so little trouble.

It is impossible to say what has been the loss of cattle from the apathy and indifference of the people in not taking advantage of this preventive. On the other hand, where the system has been carried out, it has been thoroughly effective in saving many herds.

In a village of the Salem District, murrain attacked some animals in a herd of 3,000 cattle. The sick were removed and the rest of the herd fully and systematically segregated, after which there was not another case of sickness.

Again, in a village in South Arcot District, disease appeared in a herd of 400 cattle. When I visited them, 52 had already died and 40 were sick. The healthy cattle were segregated and not another animal was attacked, and in twenty days the sickness had entirely ceased.

The removal of healthy cattle from a village has also a most beneficial effect in mitigating the type of the sickness. I would quote, as an instance of this, that of the 40 sick animals above-mentioned only five died.

At a village in Kurnool District disease broke out in a herd of 500 cattle. After these were segregated only two animals were attacked.

In another village of the same district this disease destroyed in a few days 32 animals in a herd of 350. From the time the people were induced to segregate their healthy cattle, not another case of sickness occurred.

The disease is recognised by the following symptoms:—

First stage.—The attack is insidious, making considerable progress before outward signs lead to a recognition of the complaint. The appetite is but little affected during the first three or four days. Dulness, rough staring coat, and drooping ears are the premonitory signs, followed by shivering in the colder parts of the day, with a continuous peculiar twitching of the muscles of the neck and flank; eruption on the gums and inside of lips.

Second stage.—The appetite ceases; muzzle dry; visible mucous membranes congested; discharge of mucus from nostrils and eyes; purging commences, at first of an ordinary character, but which soon assumes a peculiar characteristic offensive, putrid smell, is very watery, and is mixed with undigested food and mucus.

Third stage.—Great prostration, the animal constantly lying down; the evacuations are mixed with blood and passed frequently in small quantities with great pain and straining; the pulse is quick, and so weak as to be scarcely felt; the surface of the body and extremities cold, eye sunken, and respiration quick.

Treatment, preventive.—An average period of four days elapses from the time the disease has actually commenced in the system before any symptoms are noticed by ordinary observers. A number of animals in a herd thus become infected with the disease, and are a source of contamination to the remainder before it is detected. On an unmistakeable case occurring, the healthy cattle should be removed 300 yards from the village and picketed in detachments of 20, at intervals of 300 yards. The sick animals must be kept in confinement for treatment. This segregation is to be continued for fifteen days after the sickness has ceased. Whenever more convenient to the ryots, they might remove their cattle to their own fields and there divide them. Those who attend upon the sick animals should be careful to keep aloof from the healthy ones.

Treatment, curative.—From its low typhoid tendency, and the accompanying debilitating diarrhœa, care and moderation should be observed in the use of medicine. The main object is to support the strength and assist the powers of nature. In the first stage, if there is no purging, the following medicine may be given morning and evening:—

Camphor,	2	drachms	= (⅔rds of a rupee weight).
Nitre,	2	„	= (⅔rds of do.).
Datura,	1	„	= (⅓rd of do.).
Chiretta,	2	„	= (⅔rds of do.).
Arrack,	4	ounces	= (⅔rds of do.).

Dissolve the camphor in the arrack, powder and mix the other ingredients, then add two quarts (three bottles) of gruel, and carefully pour down the animal's throat with a drenching horn.

In the second stage, when the diarrhœa commences, it is not desirable to attempt suddenly to arrest it, as it is an effort of nature to relieve the system; but if allowed to go on to any large amount, the debility produced would impede recovery, so that, after it has existed about twenty-four hours, the following, finely powdered, may be added to the preceding prescription:— J. Thacker, Esq.

Gall-nut, 2 drachms = (⅔rds of a rupee weight). As soon as there are symptoms of improvement, the medicine should be diminished or discontinued, as the recovery is generally very rapid and requires nothing beyond supporting the strength with gruel, to which may be added the dose of arrack in extreme weakness. As soon as the animal shows the slightest inclination for food, it should be frequently supplied with small quantities of green grass, *raggy*, sugar-cane, or *cholum*.

BOMBAY PRESIDENCY.

Index of Records.

[*N. B.*—Records not printed are summarised in the Historical Sketch.]

		Page.
1.	Historical Sketch	549
2.	Report by the Civil Surgeon of Shikarpoor, dated 18th October 1864	554
3.	Extract report by the Civil Surgeon, Canara, dated December 1864	556
4.	Secretary to the Government of Bombay (forwarding Nos. 5 to 20), dated 28th December 1870	558
5.	Revenue Commissioner, Northern Division (forwarding Nos. 6 to 14), dated 24th November 1870	558
6.	Collector of Colaba, dated 3rd September 1870	558
7.	Collector of Tanna, dated 5th September 1870	559
8.	Assistant Collector, Punch Mehals, dated 7th September 1870	559
9.	Collector of Broach, dated 15th September 1870	560
10.	Ditto of Surat, dated 30th September 1870	560
11.	Ditto of Khandeish, dated 8th October 1870	561
12.	Ditto of Nassick, dated 5th October 1870	561
13.	Ditto of Ahmedabad, dated 22nd October 1870	562
14.	Ditto of Kaira, dated 16th November 1870	...
15.	Commissioner of Sind (forwarding Nos. 16 to 20), dated 9th December 1870 ...	563
16.	Collector of Kurrachee, dated 17th November 1870	563
17.	Ditto of Hydrabad, dated 3rd October 1870...	564
18.	Ditto of Shikarpoor, dated 30th November 1870	565
19.	Political Superintendent, Frontier, Upper Sind, dated 20th September 1870 ...	566
20.	Ditto, Thurr and Parkur, dated 2nd November 1870	566
21.	Secretary to the Government of Bombay (forwarding Nos. 22 to 31), dated 9th January 1871	567
22.	Revenue Commissioner, Southern Division (forwarding Nos. 23 to 31), dated 29th December 1870	567
23.	Collector of Canara, dated 5th September 1870	567
24.	Ditto of Dharwar, dated 10th September 1870	568
25.	Ditto of Kulladghee, dated 17th September 1870	571
26.	Ditto of Ahmednuggur, dated 22nd September 1870	571
27.	Ditto of Rutnagherry, dated 3rd October 1870	571
28.	Ditto of Poona, dated 13th October 1870	574
29.	Ditto of Belgaum, dated 18th October 1870	574
30.	Ditto of Sholapoor, dated 18th October 1870	575
31.	Ditto of Sattara, dated 21st December 1870	576

HISTORICAL SKETCH.

In compliance with a letter from the Government of India (No. 3153, dated 30th June 1870), forwarding a communication from the President of the Cattle Plague Commission (No. 372, dated 14th June 1870), requesting information on the subject of cattle murrains, past and present, the Bombay Government forwarded (letter No. 3645, dated 30th July 1870) all the papers which had been collected upon the subject up to the date of this communication.

On the receipt of a letter from the Madras Government (dated 27th October 1863), accompanied by a copy of the reports of cattle disease in the Kurnool District, and asking for information, inquiries were made through the Civil and Medical Officers of the Presidency. These produced a series of reports from Collectors, of which the following is a summary :—

1864. The reports of Collectors of the Southern Division were forwarded to Government on the 16th April 1864.

AHMEDNUGGUR.—The Collector reports that cattle disease is not known in the district.

DHARWAR.—Cattle disease—*hirey bialee*—or the great disease exists ; cause not known ; symptoms not described ; native remedies given, but almost invariably without success.

SHOLAPOOR.—Cattle disease similar to the Madras murrain prevailed two and four years ago (1860 and 1862) ; cause unknown ; treatment said not to be efficacious ; sugar, ghee, boiled rice, and *toordall* given.

SATTARA.—The disease has occurred in some talookas of this district ; disease attributed to heat and venomous snakes ; native methods of treatment described.

POONA.—Disease similar to the Madras disease known ; very fatal ; called *bhool, chandia, bhewanee, keermeeya, khaprya ; khoorkhoot*, a disease of the feet, also known ; *wara* and *rogh* are other names given ; native remedies are described.

BELGAUM.—Disease known in this district, called *heerey byanee,* the worst of diseases, and *matha rog ;* native remedies described.

CANARA.—Cattle disease, called *dhod rog* (the Madras name), known in the district ; contagious ; gives native cures, but states that no more than 5 per cent. recover.

RUTNAGHERRY.—Disease called *moosulwada* known ; not unlike cholera ; gives 32 native modes of treatment ; among them elephant's dung mixed with water, and levigated tongue of a tiger.

COLLECTORS OF NORTHERN DIVISION.

AHMEDABAD.—Small-pox prevailed in June and October ; was very virulent last year (1863) and 9 or 10 years before that (1854) ; little done in the way of treatment ; disease ascribed to *seetla matah.*

SURAT.—Disease occasionally appears similar to the Madras disease ; treatment not applied systematically.

TANNA.—Disease known under the same name as the natives give to small pox—*devi ;* segregation practised as far as possible ; percentage of recoveries 5 to 25 ; symptoms described as an eruption of pustules, diarrhœa, emaciation, and death ; no remedy known.

KHANDEISH.—Disease similar to the Madras murrain, known in the district by the same names as human small-pox ; no treatment known.

KAIRA.—No report.

On this the Bombay Government circulates the information obtained and forwards the reports to Captain W. A. Neale, Superintendent of the Government

HISTORICAL SKETCH. Cattle Farm, Malligaum, Mr. Hallen, Staff Veterinary Surgeon at Kirkee, and the Inspector General of Hospitals, Medical Department.

Captain Neale states (18th October 1864) that the disease is familiar to him, and occurred at Sholapoor in 1859, and at Malligaum in 1863. He treated by purging, blistering, common salt, and no water. Two sick cattle which escaped and went to the river were found dead next morning. States that the disease is highly contagious, and recommends segregation. Notes the prevalence of *variola ovis*, and describes from personal experience the advantage of inoculation in that disease. Captain Neale inoculated many hundred sheep with perfect success, and is fully convinced that sheep properly inoculated are perfectly free from contagion.

Mr. Hallen concurs with Veterinary Surgeon Thacker in his views regarding the disease.

The Inspector General of Hospitals forwards (30th November 1864) a series of valuable reports from Medical Officers, which may be summarised as follows :—

TA'NNA.—Assistant Surgeon Asher comments on the Madras and Bombay papers, and would attribute the diseases noted to bad climate and diet, but it does not appear that he had any practical knowledge or experience on the subject.

Assistant Surgeon Plumptre, Superintendent of Vaccination, Southern Circle, comments on the modes of treatment detailed, and considers them either harmless and useless or likely to increase mortality, or actually cruel.

Assistant Surgeon Dick, Superintendent of Vaccination, Northern Circle, has had little or no practical experience. He draws a parallel between sheep pox and cattle murrain, and doubts whether vaccination will be held protective against the latter, as it is *not* against the former.

SATTARA.—Assistant Surgeon H. V. Carter also alludes to sheep pox, and recommends segregation and slaughter in cattle murrain. From the evidence of natives, it appears that among sheep and goats, small-pox (*moi*, *phorya*, *manmoræ*) is a common and fatal disease ; about 50 per cent. die. It is an eruptive disease of the hot weather and very contagious.

Among buffaloes and cows, murrain—*rog* (evidently rinderpest)—is of yearly occurrence, and occurred in 1864. Abscesses of the liver (*echinocoocus cysts ?*) also cause deaths.

RUTNAGHERRY.—Three diseases are known :—*paie*—apparently hydatid cysts of the liver—treated by driving a red-hot nail into the swelling ; *koond*—apparently hoven—" caused by bad or unsuitable food, and treated by firing indiscriminately," and placing substances in the nostrils to cause sneezing ; and *paie laig*—apparently foot and mouth disease—treated by tar, oil of blackwood and teakwood, and tobacco and chunam.

VINGORLA.—Two diseases described—*moosla boolki*, diarrhœa and cutaneous ulcers, and *lagg*, foot and mouth disease.

SAWUNTWAREE.—Three diseases known, namely, *lagg*, foot and mouth disease, *moosla boolki* or cholera, diarrhœa and appearance of worms on the surface, and *devi* or small-pox—rinderpest. The latter is well described.

AHMEDABAD.—Disease similar to the Madras disease is of ordinary occurrence in the autumnal months ; was severe last year (1863). The prevalence of pleuro-pneumonia during the cold weather is also noted.

REWA KANTA AND PUNCH MEHALS.—Cattle disease extremely fatal, occurring three or four times a year.

KATTYWAR.—Civil Surgeon describes three diseases,—*malvee*, apparently hoven, *khorwa*, foot and mouth disease, and *sitla* or small-pox—rinderpest—correctly described.

SHIKARPOOR, UPPER SIND.—The Civil Surgeon submits a very careful statement, which is appended in full. It is remarkable that foot and mouth disease is omitted from this list.

CANARA.—The Civil Surgeon gives a very careful description of rinderpest, which prevails in the months of May and September. It is said that the rate of mortality is twice as great in May as it is in September. The mortality is put down at about 75 per cent. Filth is said to intensify the disease, and segregation is stated to be seldom practised by the natives.

The disease is considered to be the murrain of Europe modified by climate. A method of treatment by saline purges followed by warm mashes and cordial drenches is detailed, and entire segregation and fumigation prescribed as sanitary measures. This paper is also, on account of its careful description of the disease, given *in extenso*.

1866-67. The last notice of cattle disease in the Presidency is contained in the report of the Forest Ranger in Sind for the year 1866-67. The grazing fees were not realized in full on account of losses from cattle disease. Dr. Pinkerton, Superintendent of Vaccination in Sind, gives a very accurate account of the disease, which is evidently rinderpest, called by the natives *secor*, small-pox, and *thudee* (cold). Of 207 cases, 64 died, 47 recovered, and 7 remained sick. This result of itself would go to show that the disease is the same as the *gootee* or *matah* of the Bengal Presidency.

1870. The letter above referred to (No. 153, dated 30th June 1870) elicited a second series of reports from the Collectors of the Districts of this Presidency. These were forwarded by the Government of Bombay on the 28th December 1870 (Sind and Northern Division) and 9th January 1871 (Southern Division). These papers contain much valuable information and are printed below, the diseases which cannot be identified being omitted. It is obvious that a catalogue of names and descriptions, when the morbid states which they are intended to represent cannot be fixed, is rather confusing than otherwise, and the necessity of skilled inquiry and report is as obvious in this as in the sister Presidencies. The information contained in these papers may be summarised as follows :—

NORTHERN DIVISION.

COLABA.—Several distinct epizootics are known, and 200 cattle were ill in September 1870, of *phansee*, in the Mangaon Talooka. *Mooslya* and *debee* are described, and seem to be varieties of rinderpest.

TANNA.—Cow-pox and *khoorkhoot* (foot and mouth disease) are known.

PUNCH MEHALS.—*Balia*, small-pox (? rinderpest), and *mowaso* or *khurwalo*, foot and mouth disease, are known. Cattle diseases have been destructive in these mehals since 1864.

BROACH.—*Sitlah* (cow-pox), rinderpest, and *mowaso* are common, but have not appeared for the last 4 or 5 years. They are considered contagious.

SURAT.—*Sitlah* and *mowaso* are occasionally prevalent.

KHANDEISH.—*Popsha*, apparently rinderpest, prevailed in 1862 and 1865. It is said to recur every 5 or 10 years and carry off two-thirds of the cattle. In Jumnair Talooka it occurs every two or three years; cattle are said to die in one or two days. The disease is said to carry off seven-eighths of the stock. It had not occurred since 1865-66.

NASSICK.—Murrain prevails from time to time; is now (October 1870) prevailing in the Baglan and Dindooree Talooks. From the symptoms described, both rinderpest and foot and mouth disease evidently occur.

AHMEDABAD.—Murrains have been known to prevail on several occasions since 1860 in Goozerat, and diseases of cattle,—*sitlah*, *khorwa*, &c.,—were prevalent when the letter was written (October).

KAIRA.—Murrains are known in the district and prevailed in 1870; 2,909 cattle are said to have died. *Bulia* and *matah* are named, and appear to refer to rinderpest.

SIND.

HISTORICAL SKETCH.

KURRACHEE.—Murrain prevailed in the Tatta Talooka of the Jerruck Division in 1862; again in the Tatta and Ghorabaree Talookas in 1866-67; 6,828 cattle died in the former, and 1,100 in the latter. The disease is called *thudee* and *guttiar*, and appears to have been rinderpest. In 1869 foot and mouth disease, known as *summaro*, prevailed in the Sehwan Division; 500 were attacked and 5 per cent. died, and in this year 500 camels, out of 1,000 attacked, are said to have died of *thudee*, a discharge of offensive blood from the anus, in the Kotree and Dadoo Talookas of this Division. In 1869, also, cattle disease occurred in the Shahbunder Division. The diseases named are *guttiar*, *thudee*, *pheepree*, &c. Murrain was also prevalent in the Beyla and Meerpoor Battora Talookas of the Shahbunder Division. In the latter 1,270 animals were attacked and 26 recovered, and in Talooka Jattee, 70 and 22.

In 1870 *seeor*, small-pox, was prevalent in the Dadoo Talooka of the Sehwan Division.

HYDRABAD.—Cattle are said to have died in large numbers from want of food in 1864 and 1866. *Thudee* or *seeor* is known, and appears to be rinderpest.

SHIKARPOOR.—Disease of some kind is said never to be absent. It sometimes appears in one part, sometimes in another, with different degrees of virulence; *seeor* and *pheepree* are mentioned.

FRONTIER, UPPER SIND.—*Seeor* is said to have prevailed among cows, buffaloes, and camels in the Thool Talooka during the years 1869-70. The symptoms are well described, and are evidently those of rinderpest; 368 cattle are said to have died among 436 attacked.

In Kusmore Talooka *silt* and *ghutt* (probably rinderpest, from the symptoms) prevailed also in 1869 and 1870; 800 deaths occurred among 1,150 attacked.

THURR AND PARKUR.—Plague was very severe in 1860, and about nine-tenths of the cattle attacked died. A variety of diseases of cattle are known by the natives, but small-pox has caused the greatest mortality.

SOUTHERN DIVISION.

CANARA.—Three forms of cattle disease are said to have been prevalent in the Coompta, Honore, Sircy, Siddapore, Yellapore, and Soopa Talookas during the past year, namely, *laga roga*, foot and mouth disease, and *maha roga* and *chendoo roga*, apparently forms of rinderpest; 814 cattle had died among 1,178 attacked, or 68 per cent.

DHARWAR.—*Hirey byanee*, evidently rinderpest, prevalent in the district most severely in the hot weather.

A monthly return from March 1869 to December gives 1,430 attacked and 969 died, or 67 per cent., and from January to July 458 attacked and 206 died, or 45 per cent. Measures were adopted to check the disease, but what these were does not appear.

KULADGHEE.—No epizootic is said to prevail or to have prevailed in this district.

AHMEDNUGGUR.—No disease prevailed in September. The diseases *haolia rog*, evidently rinderpest, *khoorkhoot*, foot and mouth disease, and others which can't be identified are described.

RUTNAGHERRY.—No disease prevailed in October, but a tabular statement is submitted giving statistics of murrain (rinderpest, from the symptoms described), called *moo-salwada*, from January 1869 to August 1870. This statement shows 8,887 deaths among 10,759 attacked, or 82 per cent.

Another disease, called *peya*, existed in the district during the rains; nature not obvious; 2,056 died in 2,703 attacked, or 76 per cent., during the same period.

POONA.—No positive information was obtained from this district.

BELGAUM.—Malignant cattle disease prevailed in 1870. The disease is called *heriberri.* All the symptoms assigned are those of rinderpest. *Kalberri* seems to be the local name for foot and mouth disease. A considerable mortality had occurred in several parts of the district.

SHOLAPOOR.—Cattle disease prevailed in October, and had prevailed for some time previously; 988 cattle had died during the last year. The most fatal disease is *mota rog* or *waryacha rog,* apparently rinderpest. *Khoorkhoot* is known, and some other diseases are noted.

SATTARA.—Diseases of an epizootic nature are said to prevail to a considerable extent, and from some of the symptoms recorded, most probably rinderpest and foot and mouth disease are the principal.

The general inferences from the information above summarised are :—

1. That though very exact data as to the history and prevalence of rinderpest in the Bombay Presidency are wanting, the papers furnished prove that it is a well-known and widespread disease, causing occasionally much loss of cattle ;

2. That the other diseases of horned stock known and described in the Madras and Bengal Presidencies,—foot and mouth disease, hoven, swelled throat, and pleuro-pneumonia,—are also known in Bombay;

3. That no successful method of prophylaxis or treatment is practised ; and

4. That no step, legislative or otherwise, has been adopted with a view to the limitation or extirpation of the disease.

Some of the reporters, recognising the imperfection of the usual method and result of collecting information on this subject, urge the propriety of inquiry by a skilled agent. Most of them express doubts of the accuracy of both facts and figures, but excluding much which cannot be understood, or elucidated by comparison, sufficient remains to demonstrate these inferences satisfactorily.

SHIKARPOOR. *Report by the Civil Surgeon, Shikarpoor, on the Diseases prevalent among Cattle and Grazing Stock in Upper Sind,—dated 16th October* 1864.

In submitting the following report of diseases prevalent among cattle and grazing stock in Upper Sind, I beg to remark that I have had no opportunity of observing the progress of any of the diseases enumerated, and that nearly the whole of my information has been received from native herdsmen who profess to cure sick cattle. Their treatment and that in vogue among the people is given, but of medical treatment, or remedies properly so-called, they appear to have no knowledge.

The most fatal disease is called *mohara*. When prevalent, it is represented as destroying whole herds and causing enormous losses, but I am unable to procure correct data to illustrate this point. The large flocks and herds which always suffer most from epizöotic disease are scattered over miles of country wherever pasturage is to be found, so that the disease rarely falls under the observation of persons likely to investigate it. However, the people generally, and the herdsmen particularly, appear to have tolerably correct notions on some points. They describe the signs, progress, and cause of death minutely; and, believing that many of the diseases enumerated are infectious, they recognize the importance of separating the sick from the healthy animals. In regard to the "practice," little need be said; in most cases it is negative, and the animal is left to nature; and if in some instances it is inert and harmless, in others it is rude, cruel, and worse than useless.

The diseases are arranged in the order of their frequency.

MAI.

Hind., matah; *Sind*, mai; *English*, small-pox.

Definition.—A malignant pustular disease, setting in with severe febrile disturbance.

Physical signs.—The animal leaves off feeding and lies down, runs at the nose and eyes, and in the course of a few days its whole body becomes covered with large pimples, which gradually become vesicular with a depressed centre, ultimately pustular, resembling "small-pox."

Cause.—Not known, but believed to be a specific infection. The disease originates in quadrupeds, and is epizöotic in cold, sickly seasons. No experiments have been made with a view to induce the disease in healthy animals by inoculation, or establish its identity with small-pox. This is strange, inasmuch as the Mussulmans of Sind are well acquainted with the protective power of inoculation, and have practised it among themselves for ages. If it is indeed small-pox, it is, to say the least, much more virulent than that usually met with among cattle in Europe.

Progress.—The pustules burst, discharge their contents, and are covered with a scab; and the animal, if not carried off by colliquative diarrhœa, and if the attack has not been very severe, ultimately recovers; but when the disease is very prevalent, and the season is cold and sickly, nearly all attacked perish.

Mortality.—The mortality is not accurately known, but believed to be about two-thirds of all attacked.

Treatment.—The animal is fed with conjee prepared with wheat flour, anise seed, and molasses, or with buttermilk. As the object is to support the animal's strength and keep it alive until the disease has run its course, this treatment appears rational.

MOHARA.

Hind., mooh pukka; *Sind*, mohara; *English*, sore mouth.

Definition.—Acute inflammation of the mouth, tongue, throat, and salivary glands, setting in with febrile symptoms.

Physical signs.—In this disease also the first sign of sickness is the animal refusing its food; the jaws swell, the tongue protrudes a little from the half-opened mouth, and the saliva escapes and falls upon the ground, the animal having lost the faculty of swallowing.

Cause.—Not known. Its attacks are not limited to any season. Sheep, goats, and horned cattle are most obnoxious, but other animals are also liable, and it has been frequently seen in dogs.

It resembles the disease called "Strangles" in the secondary affection of the salivary glands, but differs from it in its fatality and inflammation of the mouth and mucous glands near the root of the tongue.

Progress.—The progress is very rapid, and always terminates fatally. The inflammation extends to the base of the tongue, respiration is impeded, and the animal perishes from apnœa or suffocation.

Mortality.—All attacked perish; but I can find no statistics to enable me to arrive at an approximation of the percentage attacked.

Treatment.—Unless the cruel and useless operation of firing may be called "treatment," there is none practised.

PHEEPREE.

Hind., zalooljunb; *Sind*, pheepree; *English*, pneumonia.

Definition.—Inflammation of the lungs. When the disease is limited to one lung it is called *pheepree;* when both are implicated it is called *ghoghe.* The herdsmen are able to diagnose either, but consider them different diseases.

Physical signs.—Sudden and intense febrile disturbance, short cough, and hurried respiration. The nose and surface of the body feel hot and dry to the touch, and the animal leaves off feeding, and will not move unless pushed along. If left to itself, it remains standing until it falls through weakness.

Cause.—Inflammation of the lungs, caused by cold or certain conditions of the atmosphere. The disease is most prevalent in the winter and spring months, when the difference between the temperature of the day and night is greatest, and it appears suddenly in several animals at the same time.

Progress.—The appearances found after death tend to confirm the inference that, as in the human subject, the lung passes through the several stages of congestion, consolidation, and purulent infiltration.

The most usual morbid appearance is consolidation and discoloration of the lung. Purulent infiltration has been found but rarely, probably because it was not sought for.

The disease proceeds rapidly towards a fatal termination, the animal usually dying within the first three days; the result being doubtless hastened by neglect and exposure.

Treatment.—None practised. *Muntras* and prayers are performed and the animal left to nature.

The two following diseases are met with mostly among horned cattle:—

KAREVAO.

Hind., seemuk; *Sind*, karevao; *English*, black wind.

Definition.—Asphyxia, caused by poisonous winds or exhalations.

Physical signs.—The animal suddenly falls down and expires, without any previous warning.

Cause.—The popular belief is that it is caused by poisonous winds, all the animals in one particular direction being attacked at the same time.

Progress.—Generally and rapidly to a fatal result, but a considerable number recover; and as the attacks are not of very frequent occurrence, the mortality under this head is comparatively light.

Treatment.—Bleeding the animal from the ears.

APRI.

Hind., badee; *Sind*, apri; *English*, swelled belly.

Definition.—This disease is simply "surfeit" from over-eating. As it is avoidable, and of comparatively rare occurrence, it demands no special remarks. The native remedies are drenching the animal with oil and "firing."

The two following diseases are met with mostly among goats and sheep:—

ZARDOZI.

Hind., kuluji-ka-durd; *Sind*, zardozi; *English*, embroidery.

Definition.—Chronic disease of the liver.

Physical signs.—Not well marked. The animal loses flesh and becomes sickly, and in many cases the true character of the disease is not discovered until after death.

Causes.—Chronic disease of the liver, probably cystic or hydatid.

Progress.—Obscure, from the reasons above stated.

Treatment.—None practised.

BIRKI.

Hind., mirgee; *Sind*, birki; *English*, epilepsy.

Physical signs.—The animal runs round in a circle, cries out, and falls down in convulsions.

Cause.—Unknown, possibly insolation.

Progress.—Usually to a fatal termination.

Mortality.—Considerable, but not accurately known.

Treatment.—None practised.

SHIKARPOOR.

URNVAO.

Said to be a disease resembling cholera. The animal is suddenly attacked with diarrhœa and dies within twenty-four hours. It is not limited to any season, and is of comparatively rare occurrence.

The native treatment is to cover the animal with blankets and *numdahs*, keep it for about four hours in a room heated artificially with burning grass and rubbish ; if it survives this treatment, it is allowed to cool and kept separate from the other cattle until recovery.

If reviewed in relation to the losses entailed by the ravages of the several diseases described, only three appear, from their great frequency and mortality, to demand special attention, *viz.*, small-pox, sore mouth, and inflammation of the lungs, and fortunately they are diseases which hold out some hope of success to prophylactic measures and remedial treatment.

Taking them in the order enumerated (which is also the order of their frequency), I should suggest the propriety of taking steps to prove the identity or otherwise of the disease called *mai* with "small-pox." In stations where vaccination is kept up throughout the year, this test can be put in practice at once, and if found to give any protection against the disease, or modify the virulence of its attacks, the people will adopt the practice most willingly, but I don't believe they will of their own accord take it up experimentally.

Where the disease is at present raging, and no better means at hand, I should try the effect of inducing the disease artificially in the healthy animals by inoculation.

In reference to the disease called *mokara* or "sore-mouth," I have not much to remark, having seen the disease only once, and then in the last stage, and modified to some extent by previous interference. There was a good deal of swelling about the neck and throat, with a peculiar croupy respiration, which led me to infer the presence of fibrinous exudation; the breath was very offensive, and the animal appeared to have lost the power of moving its tongue. I was not aware of the importance of the disease at the time, and made no *post-mortem* examination; but, if I may venture an opinion on what I then observed, and have since heard described, I should say it is the analogue of the disease called "diphtheria." A disease of this character would be most difficult to treat in an animal. Any remedies prescribed should be of the most simple description to ensure their correct application in the hands of natives. In the absence of approved remedies, I think sulphate of soda, or even a strong solution of common salt, deserves a trial.

Pneumonia is a well-known disease among cattle in Europe, and many remedies have from time to time been in vogue for its treatment. Powders containing tartarized antimony, calomel, and digitalis have been employed successfully in the early stage of the disease, and I apprehend a similar combination might be tried in India with some prospect of success.

CANARA.

Extract from the Report of the Civil Surgeon, Canara.

The first symptom observable is that the tail is kept tight closed in between the hind legs, the ears fall, the eye becomes listless, and the animal refuses both food and water; trembles and shivers perceptibly. The ears are cold. Shortly, the other symptoms continuing, the skin of the body becomes very hot and dry to the touch, which produces no irritation whatever in that usually sensitive surface, the panniulus carnosus never being brought into action. The day after, or at most two days after these symptoms commence, the tongue and the salivary glands become swollen, and mucus exudation, mixed apparently with saliva, pours from the mouth. The throat is seen visibly swollen from the exterior, and the animal can no longer swallow. The feverish symptoms still continue, and after from 36 to 48 hours from the inset of the disease, purging sets in, with motions at first of a blackish color, with a watery consistence and a very bad stench, afterwards consisting almost solely of mucus and blood. The breath about the same time, or before, acquires a very bad smell, and on the third or fourth day the dysenteric purging still continuing the foot cracks between the hoofs to such an extent sometimes as literally to split up, and emits a very bad smell. No urine during this time is passed. On the fourth day a small pustular eruption appears over the body and great thirst sets in, and the animal wishes, but is not allowed by the custom of the natives, to drink. About the eighth day the animal either dies or gets better. In the latter case the swelling of the tongue, of the salivary glands, and of the fauces gets less; the stools become of a more natural character; saliva and the mucus exudation are poured forth less freely, and the stench emitted gradually disappears. The animal looks round for food. It lifts its ears; its tail, instead of being tightly pressed in between its legs, hangs easily, and is moved about ; and the animal gradually recovers its appetite and health, with the loss, however, after a few days, of most of its hair, in the falling of which numerous minute scars, covered generally with small scabs, are seen. If the sick animal dies, the hair and epidermis, if touched even lightly, fall off, or may even be blown off by the wind. The disease is equally prevalent among cows and buffaloes.

2. In the month of September and in the month of May, just before the monsoon, it is prevalent (more at the former than at the latter period), although isolated cases occur (just, as several of the natives whom I questioned on the subject said, like small-pox) throughout the year. Although it is more prevalent towards the close of the monsoon (in September) than just before setting (in May), it does not then assume so fatal a character. Of the animals attacked in May, nearly twice the number in proportion die of those attacked in September.

3. In the Balaghat the disease is not only more prevalent, but also more fatal, than on the coast parts,—about two-thirds of those attacked dying below the Ghats, and over three-fourths above. The disease is stated by the natives to be very infectious, although, from apathy, segregation of those attacked is seldom practised.

4. I have remarked, and otherwise ascertained, that the more filthily and the more crowded the animals are stabled, the more prevalent and fatal is the disease. I would have said that the cleaner the cow-houses are kept, the greater the space allowed to each animal, and the more perfect the ventilation, the less prevalent and less fatal is the disease,—were it not that such terms as "clean" and "ventilation" can in no way be used with reference to a native's cow-house in North Canara. The animals crowded as closely as they can be packed, with, beneath their feet, and forming their bed, the accumulated dung and manure of months, the mud floor saturated with the urine of years, perhaps of generations, with often no space by which the fresh air can find inlet, or the foul outlet,—often this mess in the crowded, low, unventilated, mud walled rooms, in which the inhabitants themselves live (as in Hullial), a cow-house in North Canara presents such a glomeration of filth and evil smells that one's wonder is raised that any animal can exist in it for a single day, while it seems impossible that it should leave it in health. Little wonder that the breed is stunted, and characterised by listless expressions and unhealthy leprous-looking skins; that the scanty watery milk is foul smelling; and that so many of the wretched animals are released from a miserable existence by fatal and prevalent epidemics. When we add to this that the wretched animals when released from their nightly durance flock eagerly to the *place d'aisance* frequented by their masters, there to feed greedily off the human ordure, I need add nothing more to the causes which combine to render the murrain and other forms of loathsome disease among the cattle prevalent.

5. As an instance of what the opposite mode of treatment may effect, I could not ascertain, after careful inquiry, that a single case of this so-called murrain has ever been known among the cattle of the European inhabitants, each of whom keeps, as a rule, from two to five cows and buffaloes. I suspected it in one case in a buffalo belonging to myself, but, if it was this disease which was extremely prevalent around at the time, it occurred in an extraordinary mild and modified form; the dysenteric symptoms and the general fetor being almost absent, the suppression of urine very temporary, and the eruption slightly marked.

6. The mode of treating the disease employed by the natives of this district is on the third or fourth day, if the animal will swallow, to give the dried leaves of the *cagelly* plank shrub, which possesses tonic and astringent properties, which I have been unable as yet—this is not the flowering season—to identify botanically. About half a tola of the dried leaves is powdered, mixed with boiled rice, and given to the animal as a bolus twice daily. Afterwards, about the sixth day, a decoction of the *cooksa* leaves (which possess diuretic properties), in the proportion of about four tolas of the leaves to two pints of water, is made and given twice or thrice daily in doses of a third of a pint.

7. As far as I can ascertain, these remedies have little or no effect.

8. The appearances observed on *post-mortem* examination are congestion of the principal viscera, especially of the liver, which is often filled with small abscesses. The gall-bladder is usually full of green fœtid bile; the whole mucous surface of the digestive system is highly inflamed, excoriated and ulcerated. The kidneys are sometimes disorganised. The urinary bladder is inflamed, as is the urethral passage; the former sometimes contains a little very highly-colored and fœtid urine, but is often empty. The blood is dark-colored; the blood globules, in the cases examined by the microscope, mostly broken down. The small pustules contain a putrid pus.

9. The fœtid stench from the whole body is overpowering, and the structures cut very much like dough.

10. The whole course of the disease much resembles murrain, as it appears in Europe; in fact, I believe the disease, slightly modified by climate, to be identical.

11. Having had occasion to study the disease in Scotland, and having met with considerable success in its treatment, I will here detail the mode of treatment which I found most successful. On the first appearance of the disease, the animal was immediately segregated in a hammel (a small shed with open yard in front), of which several which were isolated were set aside for the purpose. A saline purge, consisting of a solution of ten or fifteen ounces of epsom salts, with four or five grains of tartar emetic, in a quart of barley

CANARA. water, was given immediately, and the animal was clystered with eight ounces of castor oil and five of turpentine in a quart of barley water. The purges were repeated in half quantities with fifteen-grain doses of calomel, and a large ammonia blister was applied underneath and on the right side of the chest and hypochondrium. Fomentations to the throat were very useful. The latter were changed very frequently, and the utmost cleanliness was observed. The sick hammels were frequently fumigated and the stall-fed animals were turned out to pasture, which was frequently changed. As soon as the animal was able to eat, warm mashes were given, and to the convalescents cordial drenches. The animals were allowed to drink freely whenever they would. The animals which died were buried to some depth at a distance, and the hammels they had occupied were well fumigated, and not used again for some time. The byres and cattle-sheds were also well and frequently fumigated, and the litter was often renewed.

12. I believe this plan of treatment, both from its success and from a consideration of the pathology of the disease, to be, with such modifications as may suit individual cases, as good a one as could well be adopted.

13. I do not think bleeding likely to be of much or any service, except perhaps to a slight extent at the commencement to relieve local congestions; but I believe it to be very injurious if practised at a later period, or to a greater extent.

14. Regarding the prevention of the disease, I am inclined to place more reliance on continued cleanliness and good feeding, with, when the epidemic commences, entire segregation of the afflicted animals, and frequent fumigation of the cattle-sheds and great cleanliness, than an inoculation, which, I fear, would only tend to spread the epidemic to where it would otherwise be unknown. At the same time I believe that inoculation might possibly be practised from animals in which the disease may have occurred in a modified and mild form.

BOMBAY. H. E. Jacomb, Esq. *From* H. E. JACOMB, Esq., *Acting Chief Secretary to Government of Bombay, to the President, Cattle Plague Commission,*—(*No.* 6378, *dated* 28*th December* 1870).

With reference to the letter from this Government, No. 3645 of the 30th July last, I am directed to forward the accompanying reports* with accompaniments received from the Commissioner in Sind and the Revenue Commissioner, Northern Division, furnishing the information required by the Cattle Plague Commission on the points noted in your letter to the Government of India, No. 372, dated 14th June last.

* Memorandum from the Commissioner in Sind, No. 3563, dated 9th instant.
Letter from the Revenue Commissioner, N. D., No. 6219, dated 24th ultimo.

2. I am to add that the report of the Revenue Commissioner, Southern Division, will be communicated when received.

NORTHERN DIVISION. A. Rogers, Esq. *From* A. ROGERS, Esq., *Revenue Commissioner, Northern Division, to the Secretary to Government of Bombay,*—(*No.* 6219, *dated* 24*th November* 1870).

I have the honor, as required in Government Resolution No. 3644, dated 30th July last, to submit the replies of the several Collectors of this Division containing the information required by the Cattle Plague Commission.

COLABA. A. G. J. Duff, Esq. *From* A. G. J. DUFF, Esq., *Collector of Colaba, to the Revenue Commissioner, Northern Division,*—(*No.* 1735, *dated* 3*rd September* 1870).

I have the honor to submit the following report, as called for in your endorsement No. 4120 of 4th August 1870.

2. Several distinct diseases of an epizootic or pestilential nature are known in this district. There are now about 200 cattle sick with the disease called *phansee* in the Mangaon Talooka.

3. The diseases, with symptoms and duration of each, are as follows :—

1*st.*—*Mooslya* मुसलिया.

Symptoms.—Severe purging; blood passed; body feverish and feeble; animal refuses food and water; coat stares; mouth breaks out in sores full of maggots; dung very offensive; what appear pieces of entrail are passed.

Duration.—Sometimes fatal in 12 hours; oftener lasts 2 to 4 days.

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2*nd.*—Devi देवी.

Symptoms.—Body feverish; eyes red; refusal of food and drink; eruption on body; the vesicles burst.

Duration.—Four days.

COLABA.

Post-mortem appearances.—General inflammation.

The above diseases are said to be all known throughout the district which lies below the Ghauts, partly on the sea coast and partly inland; the soil is rice land in many parts, and red soil in others.

4. I think it very probable that some of these diseases, if properly described by a scientific man, would be at once recognized as well known diseases, capable of easy and sure treatment.

TANNA.
G. F. Sheppard, Esq.

From G. F. SHEPPARD, Esq., *Acting Collector, to the Revenue Commissioner, Northern Division, Tanna,*—(*No.* 3068, *dated 5th September* 1870.)

In reply to your No. 4120 of 4th ultimo, I have the honor to report that the information on the subject received from the district officers is as yet incomplete. In compliance, however, with your memo. of the 24th ultimo, I submit such detail as I am in possession of.

2. The principal cattle diseases of this part of the country appear to be known as *fashi* and *khoorkhoot;* whether these are strictly epizöotic or not is, I believe, a disputed point among the natives. The former is common in the hot weather, the latter only known during or immediately after the rains. The usual symptoms appear to be such as would naturally be expected under these circumstances.

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In *khoorkhoot* both feet and mouth are generally affected, and the odour from both is offensive; it does not, however, appear to be so generally fatal as the former. The application of teakwood oil and causing the animal affected to stand in mud are the ordinary remedies.

3. Cow-pox is also known.

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4. I shall hereafter submit the further information required.

PUNCH MEHALS.
A. C. Jervoise, Esq.

From A. C. JERVOISE, Esq., *Acting Extra First Assistant Collector in charge Punch Mehals, to the Revenue Commissioner, Northern Division,*—(*No.* 936, *dated 7th September* 1870).

I have the honor to reply to your endorsement No. 4120, dated the 4th ultimo, on a copy of Government Resolution No. 3644 of the 30th July last, on the subject of the prevalence of "epizöotic diseases."

2. There being no record bearing on the subject in this district, the following information has been collected from natives who are supposed to have a knowledge of cattle diseases.

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3. The disease which the people of the district call by the name of *balia* (small-pox) is common in the Punch Mehals, and its symptoms, &c., are described thus:—

Symptoms—Refusal of food, purging, and eyes run with water. *Post-mortem* appearances (not mentioned). Duration 10 to 12 days. Percentage of deaths 10 to 50, according to the virulence of the disease.

4. *Mowaso* or *khurwalo* is not an uncommon disease in the district, but it is not reported to be fatal, and its symptoms, &c., are refusal of food, mouth runs with water, and after two or three days the feet get swollen.

5. The Mahulkury of Jambooghora reports that there prevailed a disease in that district about the year 1864-65, to which the people have been unable to give any name, but that it was so fatal that, of the cattle which fell victims to it, not a single head escaped death.

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6. The Jhalode Mahulkury states that his pergunnah has a peculiar disease of its own which makes its appearance annually or biennially, and which he describes as under:—

Symptoms.—Swelling of the mouth, throat, and the upper part of the hind legs; mouth runs with water; difficulty in breathing. Duration 16 to 24 hours. *Post-mortem* appearances: Colour of the body as though mortified, and the body, immediately after death, smells offensively; the lungs have been found swollen.

Probably quarter-ill.—(C. P. C.)

This disease is called *avroe* by the natives.

7. The geographical position of the Punch Mehals is nowhere accurately stated, but they may be said to lie within latitude 22° 30′ and 23° 10′ north, and longitude 73° 35′ and 74° 10′ east.

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BROACH.
J. G. White, Esq.

From J. G. WHITE, Esq., *Acting Collector of Broach, to the Revenue Commissioner, Northern Division,*—(*No.* 1745, *dated* 15*th September* 1870).

With reference to your endorsement No. 4120 of the 4th ultimo, on Government Resolution No. 3644 of the 30th July last, I have the honor to report upon the cattle diseases that prevail from time to time, and usually at long intervals, in this district. They are known under the names of *seetlah* or *seelee* (cow-pox), *mowaso*, *khurchun* and *roomro*, and for the most part appear to be contagious, being produced by cattle being tied in contiguity to each other and by using the same fodder. To these may be added the *malvee rog* or *galsundee*, and *jepbaj*.

The symptoms of *seetlah* or *seelee* would appear to be purging, discharge from the mouth, and refusal of food. Its duration would seem to vary from 8 to 15 days, or even a month.

The symptoms of *mowaso* and *khurchun*, which appear to be identical, are, running from the mouth and formation of matter in the hoofs. They are not generally very destructive nor of long duration, being cured with babool leaves and other cooling medicines within 10 or 15 days. *Roomro* affects the chests of cattle, causing their breathing to be labored, and preventing their eating. This disease is much more fatal than the last named.

The *malvee rog* or *galsundee* is characterized by swelling of the throat and belly, and staring eyes. It usually lasts three days, and is known in the northern talookas; whereas the other diseases above named (with the exception of cow-pox) appear to be chiefly, if not exclusively, known in the Talookas of Unklesur and Hansote.

The *jepbaj* is characterized by swelling of the throat and refusal of food, and prevailed slightly, quite recently, in a few villages of the Broach Talooka. The *malvee rog* also prevailed recently in the Wugra Talooka to a slight extent. The other diseases have not appeared for the last four or five years.

No record has been kept in this Collectorate as to the number of cattle which have been attacked, and as to the proportion of deaths and recoveries, and therefore I am unable to furnish you with information on these points. Indeed, the information already supplied, obtained, as it has been, from the crude statements of the cultivators, can be regarded as only approximately correct.

SURAT.
T. C. Hope, Esq.

From T. C. HOPE, Esq., *Collector of Surat, to the Revenue Commissioner, Northern Division,*—(*No.* 1764, *dated* 30*th September* 1870).

In compliance with your No. 4120, dated the 4th ultimo, I have the honor to report that there is no cattle disease at present prevailing in this Collectorate, except one in Walore, which will be mentioned below.

2. The following is a description of the diseases occasionally prevalent in the different Talookas:—

ODLPAR AND CHORASEE.

I. *Mowaso or khurchun.*—The symptoms of this disease are,—trickling at the mouth, lasting for two or three days, after which the hoofs begin to get rotten. It is not generally fatal, the animal attacked usually recovering after 20 days or so. No *post-mortem* appearances ascertainable. Situation or difference of soil not believed to affect the course of the disease generally. Prevails chiefly in the hot season. No statistics procurable.

II. *Seelee or seetlah* (small-pox).—Symptoms,—trickling at the mouth, followed by diarrhœa. Recovery far less frequent than in No. I. Reported to be more virulent in the neighbourhood of the sea or salt water. Other particulars as in No. I.

III. *Unchalio.*—Very fatal and catching, violent diarrhœa, followed generally by death within 8 or 9 hours. Mortality 50 to 75 per cent. Other particulars as in No. I.

SOOPA, BULSAR, CHICKLEE, AND PARDLE.

I. *Khurmund mowaso.*—Inflammation of the mouth, food refused, running water from the mouth, sores in the feet.

II. *Seetlah* (small-pox).—Inflammation of the mouth.

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MAUDVEE.

I. *Roomdo.*—Diarrhœa and dropping of saliva from the mouth, caused by the stoppage of the passage down the throat; infectious and contagious; lasts from two to four days, and is generally fatal. After death skin becomes black and the body looks dried up. Not affected by soil or situation. Statistics not procurable.

SURAT.

BARDOLEE.

I. *Khurmund mowaso.*—Running at the mouth; animal soon ceases to eat; legs give way, and the animal falls down; infectious; not fatal always. Not affected by soil or situation. Statistics not procurable.

II. *Seetlah.*—Suppuration beneath the skin, but in the case of buffaloes it sometimes appears on the surface. Food soon refused; continual easing; infectious; no chewing of the cud; not always fatal. Not affected by soil or situation. Statistics not procurable.

WALORE.

I. *Odro.*—At present prevailing; swelling of the throat. The animal dies or recovers usually after three days. Body swells after death. The ground about the village is level, fertile, and well planted with trees. Out of 15 animals attacked, 3 recovered and 12 died.

KHANDEISH.
L. R Ashburner, Esq.

From L. R. ASHBURNER, Esq., *Collector of Khandeish, to the Revenue Commissioner, Northern Division,*—(*No.* 12-3097, *dated 8th October* 1870).

Epizöotic disease among cattle in Khandeish.

With reference to your No. 4120 of 4th August 1870, I have the honor to report that there has been no epizöotic disease among the cattle of late years, though in the year 1865, and again in 1862, a disease prevailed in Khandeish which the natives called *popsha.* The symptoms as described by the natives were as follows:—The fæces thin and watery and very offensive to the smell, the tongue rough and sore, sticky fluid from the mouth and eyes, the animals refuse food and drink, and when dying, blood streamed from the anus. This disease is said to recur every 5 or 10 years, and carries off two-thirds of the cattle. The duration of the disease is one or two days.

In Jumnair there has been no disease this year, but the Mamlutdar reports that every second or third year there appears a disease in different parts of the talooka corresponding to that described above, but not known by any particular name. Its attacks are irregular, and the contagion does not appear to extend beyond a circle of a few villages in any one year, but where it does appear it is very virulent and carries off seven-eighths of those attacked. The diseased animals die in one day after the attack. They sit and roll about in the water.

Since 1865-66 there has been no epizöotic disease known in Pachora, Seerpore, Veerdale, Amulnair, Chopra, Erundole, Nusseerabad, Sowda, Bhosawal, Pinpulnair, Nundoorbar, Tulloda, Shada, Dhoolia and Challiegam.

The cause of the disease is supposed to be the sudden change from starvation in the hot season, to unlimited feeding on fresh green grass, &c., in the monsoon. No reliable statistics can be had here, and the greater portion of the information is necessarily vague and founded on hearsay.

NASSICK.
H. U. B. Erskine, Esq.

From H. U. B. ERSKINE, Esq., *Collector of Nassick, to the Revenue Commissioner, Northern Division,*—(*No.* 2871, *dated 5th October.* 1870).

With reference to your endorsement No. 4120, dated 4th August 1870, I have the honor to forward such information as I have been able to procure on the subject of cattle disease in these districts.

2. Cattle plague undoubtedly does from time to time prevail more or less in every part of this Collectorate, but it seems to be more frequent and more virulent in form in the Dang villages and those near the Ghauts than in the villages further to the eastward.

Question 1.—Has any disease of an epizöotic nature prevailed? Is it now prevailing?

3. Cattle disease prevails at present in two or three talookas, especially in the Baglan and Dindoree Talookas, and slightly in Nassick also.

4. From the reports received, the disease seems to bear different names in the several talookas. Mr. Hammick, writing of the Nassick and Sinnur Talookas, remarks—"The natives of the country call the disease *serpán* (सरपान). The animal on being attacked assumes a dark colour, accompanied by a generally depressed appearance and loss of appetité. Death generally follows after from 2 to 4 days' illness; but if the animal survives the fourth day, its ultimate recovery may be hoped for."

Question 2.—Name of disease, symptoms, duration of attack?

5. The Second Assistant Collector, Mr. Mackenzie, in charge of Egutpoora, Dindoree, and Niphar, states—"The name of the disease is (हावळि) *hávali* or (भुलकानदा) *bhulkándya.* It commences by copious fæcal discharges, at first of a natural colour, but shortly changing to a very dark colour, and having a very foul smell. The animal refuses all food and water,

NASSICK.
H. U. B. Erskine, Esq.

rapidly becomes weak, and dies in the course of three days almost. Should it survive the third day, there is a strong probability of its recovery."

6. Mr. MacFarlan, writing from Malligaum, remarks as follows:—

"From the symptoms described by the Mamlutdars, it is difficult to distinguish between common inflammatory and other diseases not common to cattle and those to which they are peculiarly liable. I can only make out two, *viz.*, 1st, murrain, called in the vernacular *phopsa* and *mahamari;* and 2nd, foot and mouth disease, called *lall.* The symptoms of the former are described in the accompaniment to the printed report, herewith sent, and of the latter in the following extract from the treatise on the diseases of cattle published in Madras by Dr. Gilchrist, and lent to me by Captain Reid, Bazaar Master here.

Letter from the Secretary to the Government of Fort St. George, No. 1603, dated 3rd September 1864, to the Secretary to the Government of Bombay, Revenue Department, on the subject of cattle disease.

"'*Moopaung* consists of a vesicular eruption of the lining membrane of the mouth and nostrils, and also of that portion of the skin of the legs immediately above the hoof, as also of that between the hoofs. The animal on seizure becomes listless and leaves off grazing, apparently from tenderness of the mouth. After the lapse of three days there appears a running from the nose, the lower part of the legs swells, and little bladders or vesicles are found immediately above the hoofs. About the fifth day from seizure, these vesicles become small ulcers, which are to be seen on the tongue and inside of the mouth; the same also appears in the nostril and above and between the hoofs. The animal walks limpingly. The general functions of the system are little, if at all, sensibly disturbed; but if the animal be neglected, maggots appear in the nostrils and about the feet. The foul ulcers resulting may produce permanent lameness or death from mortification within the nostrils.

"'To ascertain the effects of the disease, a series of *post-mortem* examinations was instituted; and, save in a few instances which showed ulceration and softening of the mucous membrane of the stomach, the disease might be called bronchitis extending to the substance of the lungs. From this view of the subject, the treatment I suggested was to bleed copiously in the first instance, and to relieve the bowels with Glauber's salts and tartar emetic.'"

7. Mr. Mackenzie remarks, "after death the entrails appear inflamed and swollen, and the liver is covered with pustules, at least so the Mamlutdars of Dindoree and Niphar respectively report." The other assistants were unable to procure details, nor have I been able to ascertain anything of a sufficiently reliable nature to enter it here.

Question 3.—*Post-mortem* appearances?

8. All the Nassick Collectorate seems at times subject to attack, but it seems generally worse near the Ghauts and less frequent in the eastern districts, which, as a rule, are open plains of black soil. Mr. MacFarlan, however, states that he has been unable to ascertain that "conditions of soil affect these different forms of disease either as regards the intensity of attacks or liability to them."

Question 4.—District affected, situation, nature of the soil?

9. Mr. Mackenzie states that the disease was worst at a place called Wunarwadi, a village situate "in an open plain with brown soil and good garden lands."

10. It has not been possible to secure any information on this head in the least degree reliable. Mr. Hammick states that it has been reported to him that 1,000 head of cattle have died in the Nassick Talooka during the year, and about 100 of those attacked recovered. There are said to be about 150 now ill.

Question 5.—Number of cattle attacked, number recovered, number still ill?

11. At Wunarwadi, the village already referred to, the number attacked in the late outbreak is reported to have been 125. Of these, 90 died and 35 recovered. Mr. Mackenzie states that he had just received information of a fresh outbreak in a place called Wanaree. "It began seven days ago, and up to the date of the report (19th September) 25 animals were attacked; of these 15 have died. Wanaree is a small hill village 8 koss from Dindoree; the soil is red and rocky."

12. I do not think statistics collected in the loose way these have been could ever be really valuable. More would be learnt from the visit for a week of a Veterinary Surgeon to a village in which the disease prevailed than by any number of returns and reports by Collectors.

AHMEDABAD.
A. A. Borradaile, Esq.

From A. A. BORRADAILE, Esq., *Collector of Ahmedabad, to the Revenue Commissioner, Northern Division,*—(*No.* 1814, *dated* 22*nd October* 1870).

In reply to the Government Resolution No. 3644, dated 30th July 1870, in the Revenue Department, received with your endorsement No. 4120, dated 4th August last, I have the honor to report as under on the cattle disease in this district, on each point mooted by Dr. Hallen.

1*st.*—The diseases alluded to are reported to have prevailed on several occasions in various parts of the Collectorate and Goozerat generally, and some of them are also now prevailing to some extent.

AHMEDABAD.
A. A. Borradaile, Esq.

2nd.—The names of the diseases, as called by the natives of the country, are given below :—

I.—*Bulia* or *seetlah* (small-pox).

II.—*Mowassa* or *khorwa* (disease of the throat and hoofs).

* * * * * * * *

The symptoms and duration of each disease are described below :—

I. *Bulia.*—The animal declines fodder and grain, and even water, for some days, and purges; this lasts for about a week or so.

II. *Mowassa.*—The animal foams at the mouth and declines fodder and grain; small worms are to be found in the hoofs. The disease lasts for four or five days.

* * * * * * * *

SIND.
Colonel Sir W. L Merewether.

Memorandum by COLONEL SIR W. L. MEREWETHER, *Commissioner in Sind,*—(*No.* 3563, *dated 9th December* 1870).

Letter from the Acting Collector of Kurrachee, No. 4368, dated 17th November 1870, with accompaniments.
Letter from the Collector of Hydrabad, No. 2342, dated 3rd October 1870.
Letter from the Acting Collector of Shikarpoor, No. 3221, dated 30th November 1870, with statement.
Letter from the Political Superintendent, Frontier, Upper Sind, No. 1371, dated 20th September 1870.
Letter from the Political Superintendent, Thurr and Parkur, No. 604, dated 2nd November 1870, and accompaniment.

The accompanying original reports, embodying the information required by the Cattle Plague Commission, are submitted to Government in compliance with their Resolution No. 3644 of the 30th July 1870.

KURRACHEE.
Major L. D'A. Dunsterville.

From MAJOR L. D'A. DUNSTERVILLE, *Acting Collector of Kurrachee, to the Commissioner in Sind,*—(*No.* 4868, *dated* 17*th November* 1870).

With reference to your endorsement No. 2234, dated 9th August last, I have the honor to forward copies of reports, as per margin, from Messrs. James and Walker, C. S., containing the information required by the Cattle Plague Commission in regard to the diseases prevalent amongst the cattle in the Sehwan, Jerruck, and Shahbunder Divisions.

No. 390 of the 20th September 1870.
No. 424 of the 26th October 1870.
No. 355 of the 7th November 1870.

SEHWAN.
E. James, Esq.

From E. JAMES, Esq., *Deputy Collector of Sehwan, to the Collector of Kurrachee,*—(*No.* 390, *dated 20th September* 1870).

In reply to your Circular No. 3071 of the 10th ultimo, I have the honor to inform you that the following diseases afflict cattle in the Sehwan Division :—

1. *Summaro.*—This disease afflicts cows and buffaloes. The symptoms are as follows :—The hoofs split and blood issues from them. The lips and throat become sore, and foam gathers on the mouth. It is of constant occurrence in the Kotree Talooka on the banks of the Indus, where the soil is an alluvial deposit. The duration of the disease is not stated; and no peculiar *post-mortem* appearances have been observed. It is not prevalent at present. Last year 500 cattle were attacked in two months, of which about 5 per cent. died.

2. *Thuddee.*—This afflicts camels as well as cattle. Offensively smelling blood issues from the anus; about 1,000 were seized with it in the Kotree and Dadoo Talookas in March and April last, of which about 500 died; no remedy is known for it. The body after death assumes a black appearance. The duration of the attack is not stated. This disease is not prevalent now.

* * * * * * * * *

3. *Seeor.*—This is a disease which is still slightly prevalent in the Dadoo Talooka, and has been so for two months. The symptoms are like those of small-pox, and last for 8 days. The body assumes a black appearance after death. Thirty-five have been attacked, of which twenty-nine cases have proved fatal.

JERRUCK.
J. W. Walker, Esq.

Memorandum by J. W. WALKER, Esq., *Deputy Collector of Jerruck,*—(*No.* 424, *dated 26th October* 1870).

The Deputy Collector of Jerruck begs to forward the information called for by the Collector's No. 3071 of the 10th August last.

1*st.*—Cattle murrains prevailed in the Tatta and Ghorabaree Talookas during the years 1866-67, and also in the Tatta Talooka about the year 1862.

JERRUCK. J. W. Walker, Esq.

2*nd.*—The name of the disease in Sindhee is *thudee.* A form of the disease is known as *ghuttiar.* Symptoms of *thudee:*—wasting of the body; severe purging; eyes blood-shot, and often with a watery discharge; shivering fits; skin on the neck and back dries and cracks; eruptions as in small-pox; retention of urine; discharge of blood from the nose; foaming and fetid breath; skin discoloured.

Symptoms of ghuttiar.—Swelling of the glands of the throat; inability to swallow or respire freely.

Duration of attack.—From one day to ten.

3*rd.*—*Post-mortem* appearances are not known.

4*th.*—*Names of districts affected.*—The disease has prevailed in all the three talookas, but especially in the Tatta and Ghorabaree Talookas. In the Ghorabaree Talooka the soil is impregnated with salt, and during 1866-67 was unusually flooded. In the Tatta Talooka the disease prevailed chiefly in the *beylas* and flooded lands.

5. *Cattle which were attacked and died.*

Talooka Tatta	...	...	...	... 6,828
„ Ghorabaree	...	...	...	... 11,001

In detail.—Talooka Tatta,—buffaloes 2,829; bullocks and cows 3,518; camels 20; horses 13; donkeys 2; sheep and goats 446.

Talooka Ghorabaree—buffaloes 403; bullocks and cows 5,556; horses 202; donkeys 150; sheep and goats 4,696.

SHAHBUNDER. J. W. Walker, Esq.

Memorandum by J. W. WALKER, Esq., *Deputy Collector of Shahbunder,*—(*No.* 355, *dated 7th November* 1870).

The Deputy Collector, in forwarding the information called for by the Collector's No. 4110 of the 31st October, regrets that the facts furnished by the Mookhtyarkars do not refer at all to previous years. The reason assigned is that no details could be found.

1*st.*—Cattle disease has prevailed in the Shahbunder Deputy Collectorate during 1869-70.

2*nd.*—The names are *ghuttiar, pita, thudee, summaro, pheepree, ree or vaw, phukaree, seeur.*

All these names are known in the Jerruck District; all these diseases are not, however, epidemic. The diseases known as *ghuttiar, thudee,* and *summaro* only appear to be epidemics.

Symptoms of ghuttiar.—Contraction of the muscles of the throat, swelling of the limbs, discoloration of skin and blood after death; duration of attack, 24 hours.

Symptoms of thudee.—Eruptions the size of a grain of *chunna* (gram); severe purging; shivering fits: duration of attack 12 to 14 days; not in general fatal; if fatal, generally on the fourth or fifth day.

Symptoms of summaro.—Watery discharge from the eyes and mouth; skin of the legs dry and cracked; tongue occasionally sore: duration of attack, 15 to 20 days; not generally fatal.

Symptoms of pheepree.—Most common with goats; inflammation of lungs; fatal in 2 or 3 hours.

* * * * * * * *

3*rd.*—Cattle diseases have prevailed throughout the district, especially in the Beyla and Meerpoor Buttora Talookas.

4*th.*—TALOOKA MEERPOOR BUTTORA.

Cattle attacked.	*Number recovered.*
1,270	260

TALOOKA JATTEE.

70	23

No details can be obtained for the Beyla and Shahbunder Talookas.

HYDRABAD. Lieut.-Col. F. Phillips.

From LIEUT.-COL. F. PHILLIPS, *Collector of Hydrabad, to the Commissioner in Sind,*—(*No.* 2342, *dated 3rd October* 1870).

In reply to your endorsement No. 2234, dated 9th August last, I have the honor to inform you that after making careful inquiry I cannot learn that any epizöotic disease, that is to say, murrain, has prevailed among cattle in this Collectorate for many years past.

2. When cattle in this province perish in large numbers, it is always from want of food, in seasons when rain has not fallen in sufficient quantities to promote the growth of grass. Such seasons were those of 1864, 1866; and again in the present season it is reported that cattle are in great want of grass in the districts to the eastward which are beyond the influence of the canals.

3. On the other hand, in 1869, when an unusual fall of rain took place, the cattle in all parts were in the highest condition.

HYDRABAD

4. I am unable therefore to reply categorically to the questions put in the Government Resolution No. 3644, dated 30th July last, now under report.

5. In this district three descriptions of cattle disease are known, which I briefly summarise as follows:—

1*st.*—The *ghootko,* which signifies throttling. The symptoms are loss of appetite, depression, difficulty of breathing, and swelling in the throat. The disease is supposed to arise from bad water and forage, and an attack lasts but a few days. No remedy is known, and recoveries are few.

2*nd.*—*Thundee* or *seeor,* a disease somewhat like small-pox in the human being. There is an eruption in the face, the eyes water, there is foaming at the mouth, and blood is passed. The disease is generally fatal, and its duration is from 10 to 15 days.

3*rd.*—*Summaro.* The symptoms are, convulsions and foaming at the mouth; deaths few in comparison.

6. But mortality from these diseases has not lately been reported to be excessive. No *post-mortem* examination of any case is on record.

SHIKARPOOR.
Major R. R. Wallace.

From MAJOR R. R. WALLACE, *Acting Collector of Shikarpoor, to the Commissioner in Sind,—*
(*No.* 3221, *dated* 30*th November* 1870).

I have the honor to report, as directed in your endorsement No. 2234 of 1870, on the questions connected with cattle disease, put forward in the correspondence forwarded under your endorsement as above.

2. In this part of Sind there is but little information worthy of reliance to be obtained on the subject of diseases affecting cattle. Of statistics there is absolutely no record.

3. I append to this letter a statement showing the disease chiefly affecting cattle and quadrupeds generally in this Collectorate, but remedial measures, excepting cautery and exposing the animals to the smoke of wood or other fires, there are none.

4. If an unusually large number of animals are attacked in one place, those not affected are driven off to pasture at a distance.

5. Disease of some kind or other is never absent from the Collectorate; it appears sometimes in one part and sometimes in another, and with different degrees of virulence.

6. I have directed that in all weekly reports furnished by Mookhtyarkars a return should be embodied showing the nature of the disease, if any, and the number of deaths in each class of quadrupeds, camels, horses, cattle, sheep, and goats, as there is nothing on record to give even an idea of the loss resulting from this cause.

Extract from Statement showing the prevailing Diseases amongst Cattle in the Shikarpoor Collectorate.

Name of disease.	Animals which it attacks.	Symptoms.	REMARKS.
Seeor ...	Cattle ...	Refusing food, diarrhœa and watering at the eyes and nose. The attack lasts ten days, and in some cases 5 or 6 months.	
Maharo ...	Ditto ...	Lameness, worms in the feet and muzzle, eyes swell, the animal cannot open its mouth, and a watery humour (called "gig" in Sindee) runs from it, and it refuses food; also its tongue and feet are ulcerated; duration 4 or 5 days, in some cases 2 months.	
Sitru or Seetlah ...	Ditto ...	Eyes water and become red, watery humour runs from the mouth, the back and ears droop, the animal refuses food, and is rarely saved. The body becomes covered with little pustules.	

FRONTIER, UPPER SIND.
Col. R. Phayre.

From COLONEL R. PHAYRE, *Political Superintendent, Frontier, Upper Sind, to the Commissioner in Sind, Kurrachee,—(No.* 1371, *dated Jacobabad,* 20*th September* 1870.*)*

Referring to the Resolution of Government, No. 3644 of the 30th July last, received under your endorsement No. 2234 of the 9th August 1870, I have the honor to furnish the following report on "cattle plague."

2. In the Talooka of Jacobabad plague of any sort has never raged to any noticeable extent, as far as it can be ascertained.

3. In the Thool Talooka, however, during the last year, "cattle plague" prevailed all over it, and even at present it exists, though confined only to the Tuppahs of Gowespoor and Shurghur. The disease as prevailing in this part of the district is known amongst the population as *seeor*. It has mostly prevailed amongst cows, buffaloes, and camels. The most noticeable and leading symptom just before the animal contracts the disease is that it refuses food and water. The disease when contracted lasts uninterruptedly for nine or ten days, when the animal either recovers or falls victim to it, but generally the latter. During the illness of the animal there is constant watery discharge from the eyes. The *post-mortem* appearance is that the disease breaks out into a number of small eruptions, each of the size of a pea, the eyes look very much dilated, and the whole carcass has a morbid appearance. This disease first makes its appearance, or rather the cattle contract it, on lands subject to the influence of floods, and where, consequently, the soil is marshy; and being of a contagious description, the disease spreads in time all over the talooka. The people attribute the appearance of the disease and the contracting it by cattle to the malaria arising from these marshy plains when the floods have subsided and the cattle are grazing on the produce of such soil.

The total number of cattle affected by the disease last and this year is 436; of these, 45 have recovered, and 23 are still ill, the remaining 368 having died.

4. In the Kusmore Talooka, again, there are two kinds of diseases, the *silt* and the *ghutt*, as they are termed by the natives of the place. Both these diseases, though differing remarkably, so far as the primary symptoms are concerned, have a sameness in respect to cause, later symptoms, and ultimate effect. The primary symptom in the *silt* disease is the animal's breathing hard and difficult, with a hoarse sound emanating from the chest, accompanied by a constant flow of saliva from the mouth. The *ghutt* disease, on the other hand, is noticeable by the following primary symptoms:—The animal is seized with a sort of tremor resembling the ague in fever cases, so common to Sind; refusal of food immediately follows with a looseness of the bowels. The above are the particulars in which the two diseases would appear respectively to differ.

In either case the disease lasts for from 4 to 5 days. The *post-mortem* appearance is that, immediately the animal ceases to exist, the carcass gets saturated over with a kind of eruption resembling the ordinary "small-pox," and there is also a swelling all over. The natives of the place attribute the contracting these diseases by cattle to their grazing along the river bank on the produce of such soil as is thrown up by the river, either from natural causes, or by the river receding; as also from the cattle drinking warm water to be found in such places, where, from its accumulating in small patches, it is liable to get warmed from the effects of the sun.

The total number of cattle diseased in this talooka is 1,150; of these, 210 have recovered, 140 are still ill, 800 having died.

THURR & PARKUR.
Major G. B. Tyrwhitt.

From MAJOR G. B. TYRWHITT, *Political Superintendent, Thurr and Parkur, to the Commissioner in Sind,—(No.* 604, *dated 2nd November* 1870*)*.

I have the honor to forward the information called for in your No. 2234 of 9th August last.

2. Altogether in the Thurr and Parkur superintendency seven descriptions of cattle disease are known, and do still and have made their appearance among the cattle.

3. Small-pox is the disease that has caused the greatest mortality among horned cattle, but that even has not taken the form of a plague since 1860, when it was very bad, and when it made its appearance. It is stated that fully nine-tenths of those seized died.

4. I have embodied the reports of the Kardars in one return, and a translation of it in English and Persian is attached; my reason for providing the latter being that it may be useful, should it be required to compare the diseases with those described in other vernacular reports in other Presidencies.

5. The diseases described appear all over the superintendency. The desert is sand and the plain is light alluvial soil. No. 7 is common to the Narra or plain portion, but is also to be met with in the desert.

Extract from description of Diseases known among Horned Cattle in the Thurr and Parkur Superintendency. THURR AND PARKUR.

1*st*.—SMALL-POX. When an animal is attacked with this disease the limbs become stiff, water runs from the eyes, and the ears droop. All desire to eat vanishes and diarrhœa sets in, and death in a few days results. If the hide be removed, the small-pox marks will be found under it; sometimes an animal will linger on for twenty days.

6*th*.—SUMARA. The mouth and feet of the animal become sore and crack. The mortality is not great; nothing particular is observed *post-mortem*.

7*th*.—THUDDEE. This appears among animals that are permitted to graze in swampy ground. Their mouths and throats swell and their bodies become very soft, and water runs from their eyes. Very few survive an attack of *thuddee*.

[Four other forms of disease are named, but they cannot be identified. C. P. C.]

From H. E. JACOMB, Esq., *for Acting Chief Secretary to Government of Bombay, to the President, Cattle Plague Commission, Calcutta,*—(*No.* 129, *dated 9th January* 1871). BOMBAY H. E. Jacomb, Esq.

With reference to paragraph 2 of the letter from this Government, No. 6378, dated 28th December last, I am directed to forward the accompanying report,* with accompaniments, received from the Revenue Commissioner, Southern Division, furnishing the information called for in your letter to the Government of India, No. 372, dated 14th June 1870.

* No. 5257, dated 29th December 1870.

From W. H. HAVELOCK, Esq., *Revenue Commissioner, Southern Division, to the Chief Secretary to Government, Bombay,*—(*No.* 525, *dated* 29*th December* 1870). SOUTHERN DIVISION

As called for in Government Resolution No. 3644, dated 30th July 1870, I have the honor to submit the reports, as per margin, received from the Collectors of the Southern Division, supplying, as far as practicable, the information required by the President, Cattle Plague Commission, in his letter to the Government of India, No. 372, dated 14th June 1870.

Letter from Acting Collector of Canara, No. 2316, dated 5th September 1870.
Ditto ditto, Dharwar, No. 1897, dated 10th September 1870, and accompaniment.
Ditto ditto, Kulladghee, No. 1061, dated 17th September 1870.
Ditto ditto, Ahmednuggur, No. 1717, dated 22nd September 1870, and accompaniment.
Ditto ditto, Rutnagherry, No. 2060, dated 3rd October 1870, and accompaniment.
Ditto ditto ditto, No. 2434, dated 24th November 1870, and accompaniment.
Letter from Collector of Poona, No. 2135, dated 13th October 1870.
Ditto ditto, Belgaum, No. 1385, dated 18th October 1870, and accompaniment.
Ditto ditto, Sholapoor, No. 2337, dated 18th October 1870.
Ditto ditto, Sattara, No. 3692, dated 21st December 1870, and accompaniment.

From J. ELPHINSTON, Esq., *Acting Collector of Canara, to the Revenue Commissioner, Southern Division,*—(*No.* 2316, *dated Carwar, 5th September* 1870). CANARA. J. Elphinston, Esq.

With reference to your endorsement No. 3291 of the 5th ultimo, forwarding Government Resolution No. 3644, dated 30th July last, calling for a report as to whether any disease of an epizöotic nature had prevailed among the cattle in this district, I have the honor to state that, from inquiries I have made, I find that there were three diseases prevalent in this district during the past year, as noted in the margin.

Lagā Rógā (mouth and foot disease).
Máhārogā.
Chendooroga.

2. The first disease is generally first visible in the lower part of the feet, which, if due care be not taken, become gradually entirely rotten. Sores are formed in the feet between the toes, and sometimes one of the hoofs falls off, and large maggots are frequently formed in the sores. This is also accompanied with ulcers in the mouth, and the whole body is sometimes affected with sores. If the attack is not severe, the animal lives for a week or two.

3. The second disease, called *máhārogā*, is usually accompanied with diarrhœa or watery purging, and the saliva is ejected from the mouth of the animal for a day or two. The stomach dries up and becomes very thin. The duration of this disease is estimated to be a fortnight or three weeks, after which the animal generally dies.

4. The third, or *chendooroga*, is one in which the neck of the animal is swollen and it appears very much distressed, and refuses all food and water, and ceases altogether from chewing the cud. In this state it continues for six or seven days, and if some strong remedy is not employed soon, it dies within that period.

CANARA.

5. The diseases above referred to had appeared in the Coompta, Honore, Sirey, Siddapore, Yellapore, and Soopa Talookas, and the number of cattle attacked, recovered, and died in each of the above talookas is given in the margin, from which it will be observed that the number of cattle attacked and died from these diseases is greater in the Honore Talooka than in all the rest. This is attributable to the diseases having suddenly increased in violence in this talooka.

	No. attacked.	Died.	Recovered.
Coompta	23	23	„
Honore	607	435	172
Sirey	242	90	52
Siddapore	271	189	82
Yellapore	44	29	15
Soopa	91	48	43
TOTAL ...	1,178	814	364

6. Among the talookas where cattle disease prevailed, Coompta and Honore are on the sea-coast below the Ghauts, and the soil is generally sandy. The rest of the talookas are above the Ghauts, and the soil is generally stiff and clayey and retentive of moisture. In almost all of the above Ghaut Talookas there is a great scarcity of water in the dry season, and the water generally used by men and beasts is full of mud and decomposed matter; as this is the case, I believe it is one of the chief causes of the epidemic diseases among both men and cattle above the Ghauts.

DHARWAR.
E. P. Robertson, Esq.

From E. P. ROBERTSON, Esq., *Acting Collector of Dharwar, to the Revenue Commissioner, Southern Division,—(No.* 1897, *dated Dharwar,* 10*th September* 1870).

In reply to your endorsement No. 3291, dated 5th instant, I have the honor to reply *seriatim* to the several questions put by the President, Cattle Plague Commission, as regards the Dharwar District.

1*st.*—A disease among cattle of an epizöotic nature prevails more or less throughout the districts of this Collectorate. It is prevalent at all seasons of the year, but its ravages are greatest during the hot season.

2*nd.*—The disease is called *hirey byanee* by the natives of this country. The symptoms of the disease are,—the animal first refuses food, but drinks greedily. This is followed by a fluid discharge from the eyes and nostrils, frequent and bloody fæcal discharges, and scanty high-colored urine. The disease lasts for three or four days, when generally it proves fatal.

3*rd.*—*Post-mortem appearances.* No *post-mortem* examination has ever been made in this district of cattle that have died from *hirey byanee.*

4*th.*—The disease prevails in almost all the talookas of this district on black soil plains as well as in hilly districts; but it seems to be worse generally in the latter, where the soil is red and hard.

5*th.*—As regards the number of cattle attacked, number recovered, and number still ill, I append a statement showing the progress of the cattle disease for the last 17 months in this district.

Statement showing the Progress of Cattle Disease in the Dharwar Collectorate.

No.	NAMES OF TALOOKAS.	Number of cattle labouring under disease at the end of last month.	Number of cattle attacked with disease during the current month.	Total of columns 3 and 4.	Number of cattle died.	Number of cattle recovered.	Number of cattle remaining unrecovered at the close of the month.	REMARKS.
			MARCH 1869.					
1	Dharwar ...	...	75	75	42	29	4	The Mamlutdar reports that the disease is not gaining strength.
			APRIL 1869.					
1	Dharwar ...	4	47	51	29	13	9	

Statement showing the Progress of Cattle Disease in the Dharwar Collectorate—continued.

No.	Names of Talookas.	Number of cattle labouring under disease at the end of last month.	Number of cattle attacked with disease during the current month.	Total of Columns 3 and 4.	Number of cattle died.	Number of cattle recovered.	Number of cattle remaining unrecovered at the close of the month.	Remarks.
				MAY 1869.				
1	Hooblee ...	...	32	32	32	...	...	The Mamlutdars report that every precautionary measure has been taken to check the progress of the disease.
2	Dharwar ...	9	119	128	74	34	20	
3	Nowgoond ...	...	88	8	44	17	27	
4	Dumbul ...	...	50	50	22	18	10	
5	Raneebednoor ...	...	20	20	8	10	2	
6	Kode	...	18	18	12	6	...	
	TOTAL ...	9	327	336	192	85	59	
				JUNE 1869.				
1	Hooblee ...	...	10	10	10	...	...	Ditto ditto.
2	Dharwar ...	20	58	78	42	28	8	
3	Nowgoond ...	27	17	43	21	22	...	
4	Dumbul ...	10	50	60	33	17	10	
5	Raneebednoor ...	2	72	74	20	2	52	
6	Kode	...	4	4	4	...	...	
	TOTAL ...	59	210	269	130	69	70	
				JULY 1869.				
1	Dharwar ...	8	25	33	20	5	8	Ditto ditto.
2	Nowgoond ...	...	12	12	4	4	4	
3	Dumbul ...	...	...	10	...	10	...	
	TOTAL ...	8	37	55	24	19	12	
				AUGUST 1869.				
1	Dharwar ...	8	53	61	46	11	4	Ditto ditto.
2	Nowgoond ...	4	15	19	10	9	...	
3	Raneebednoor ...	...	6	6	2	4	...	
	TOTAL ...	12	74	86	58	24	4	
				SEPTEMBER 1869.				
1	Dharwar ...	4	347	351	241	65	45	Ditto ditto
				OCTOBER 1869.				
1	Dharwar ...	45	175	220	144	48	28	The Mamlutdar reports that the disease is on the decrease.

DHARWAR.

Statement showing the Progress of Cattle Disease in the Dharwar Collectorate—concluded.

No.	Names of Talookas.	Number of cattle attacked with disease at the end of last month.	Number of cattle attacked with disease during the current month.	Total of columns 3 and 4.	Number of cattle died.	Number of cattle recovered.	Number of cattle remaining unrecovered at the close of the month.	Remarks.
				NOVEMBER 1869.				
1	Dharwar ...	28	96	124	43	89	...	The Mamlutdar reports that steps have been taken to check the progress of the disease.
				DECEMBER 1869.				
1	Dharwar ...	...	31	31	20	11	...	Ditto ditto.
2	Hooblee ...	...	44	44	38	6	...	
3	Dumbul ...	...	12	12	8	3	1	
	TOTAL ...	...	87	87	66	20	1	
				JANUARY 1870.				
1	Dharwar ...	...	32	32	12	20	...	The Mamlutdar reports that the disease has almost ceased to prevail.
				FEBRUARY 1870.				
1	Dharwar ...	...	10	10	9	...	1	Ditto ditto.
				MARCH 1870.				
1	Dharwar ...	1	14	15	12	3	...	Ditto ditto.
				APRIL 1870.				
1	Dharwar ...	...	43	43	43	...	...	The Mamlutdars report that steps have been taken to check the progress of the disease.
2	Raneebednoor ...	...	36	36	13	13	10	
3	Kode ...	...	140	140	...	120	20	
	TOTAL ...	...	219	219	56	133	30	
				MAY 1870.				
1	Hooblee ...	...	12	12	12	...	...	Ditto ditto
2	Raneebednoor ...	10	48	58	38	14	6	
3	Kode ...	33	42	75	48	27	...	
	TOTAL ...	43	102	145	98	41	6	
				JUNE 1870.				
1	Raneebednoor ...	6	2	8	7	1	...	The disease has nearly ceased to prevail.
				JULY 1870.				
1	Kode ...	...	68	68	12	54	2	Ditto ditto.

From J. F. ARMSTRONG, Esq., *Collector of Kulladghee, to the Revenue Commissioner, Southern Division, Poona,—(No.* 1061, *dated Kulladghee,* 17*th September* 1870). KULLADGHEE. J. F. Armstrong, Esq.

With reference to your circular endorsement No. 3291 of 5th ultimo, I have the honor to state that no disease of an epizöotic nature appears to have prevailed among the cattle in this district, nor is any prevailing. Cattle have, of course, died, and do now die, but there has been nothing in the shape of a cattle murrain.

From the Collector of Ahmednuggur, to the Revenue Commissioner, Southern Division, Poona,—(No. 1717, *dated Ahmednuggur,* 22*nd September* 1870). AHMEDNUGGUR.

With reference to your memo. No. 3291, dated 5th August last, and accompaniments, calling for report respecting the various diseases to which cattle are subject in these districts, I have the honor to forward a tabular statement containing such information as I have been able to gather through the Native Talooka officials.

I may add that none of the diseases specified are now prevalent.

The nature of this district is the same as that of the Deccan generally, and, as far as I know, there is no peculiarity of either soil or climate which would tend to foster any particular disease.

I regret that there are no data by which I could furnish the information required by Mr. Hallen in the 5th and last query.

[In the statement furnished by the Collector of Ahmednuggur, the diseases *khoorkhoot* (foot and mouth disease) and *haolia rog* (rinderpest) are shown as being known in different parts of the district. Nine other diseases are named in the statement, but they cannot be identified. C. P. C.]

Extract from Statement showing the Names, &c., of Diseases which are known to prevail among Cattle in the several Talookas of the Ahmednuggur Collectorate.

1	2	3	4	5	6	7
No.	Name of disease.	Talookas in which they are known to prevail.	Symptoms.	*Post-mortem* appearances.	Duration of the attack.	REMARKS.
7	Haolia rog ...	Ankola ...	1*st.*—Diarrhœa, gradual enlargement of the lungs, constipation, evacuation of fleshy matters, excessive thirst. 2*nd.*—Swelling of the body, dulness, loss of appetite.	The body emits a bad smell, the eyes sink, water runs from the mouth and nose, mucous discharge from the nose.	15 days.	

From W. SALMON, Esq., *Acting Collector of Rutnagherry, to the Revenue Commissioner, Southern Division, Poona,—(No.* 2060, *dated Rutnagherry,* 3*rd October* 1870). RUTNAGHERRY. W. Salmon, Esq.

In reference to your circular endorsement No. 3291 of 3rd August last, forwarding copy of Government Resolution No. 3644 of 30th July 1870, I have the honor to forward herewith a statement giving the information required by the President of the Cattle Plague Commission.

RUTNAGHERRY.
W. Salmon, Esq.

Statement giving information required by the President of the Cattle Plague Commission as directed in Government Resolution (R. D.) No. 3644 of 30th July 1870, received under the Revenue Commissioner, Southern Division's endorsement No. 3291 of 5th August 1870, from January 1869 to August 1870.

No.	Names of the districts affected.	Situation.	Nature of the soil.	Name of the disease.	No. of cattle attacked.	No. recovered.	No. died.	No. still ill.	Remarks.
1	Malwan ...	Near the sea-shore ...	Sandy ...	Mussulwada ...	109	27	82	...	The animal before being attacked by this disease loses its strength, lays back its ears, its eyes sink in, it refuses food, becomes thirsty, does not chew the cud, is attacked by fever, saliva flows out from its eyes. Later on it begins to pass watery stools, its belly swells, and coagulated blood is thrown out in the motions. It dies within 6 or 7 days, or sometimes within 2 or 3.
2	Deogurh ...	Near the Syhodree range, and also the sea-shore.	Hilly, sandy, rocky, and level.	Ditto ...	411	4	407	...	
3	Rajapoor ...	Ditto ...	Ditto ...	Ditto ...	938	311	627	...	
4	Rutnagherry ...	Near the sea-shore ...	Hilly and sandy ...	Ditto ...	250	129	121	...	
5	Sungmeshurn ...	Near the Syhodree range.	Rocky hills and level	Ditto ...	211	42	169	...	
6	Chiploon ...	Ditto ...	Hilly and rocky ...	Ditto ...	2,450	515	1,935	...	
7.	Gohagur ...	Near the sea-shore ...	Rocky and sandy ...	Ditto ...	707	145	562	...	
8	Soveendroog ...	Near the sea-shore and the Syhodree range.	Rocky and hilly ...	Ditto ...	5,683	695	4,984	4	
				Total ...	10,759	1,868	8,887	4	

From W. SALMON, *Esq., Acting Collector of Rutnagherry, to the Revenue Commissioner, Southern Division,—(No. 2434, dated Rutnagherry, 24th November* 1870).

In reference to your letter No. 4154 of the 8th ultimo, I have the honor to inform you that the information regarding the cattle disease called moosulwada, supplied in the statement forwarded to you with my letter No. 2060 of the 3rd idem, relates to a period from January 1869 to August 1870.

2. The above disease generally prevails in the hot weather, but sometimes in the cold and rainy seasons, and lasts for about one or two months, and sometimes four or five months.

* * * * * * * * *

3. A statement giving the information of a similar disease called *peya*, or otherwise called *nurud peya*, is herewith forwarded. This disease generally prevails in the rainy season, and sometimes in the hot and cold weather. It lasts for one or two months, and sometimes four or five months, or throughout the year.

Statement giving information required by the President of the Cattle Plague Commission, as directed in Government Resolution (Revenue Department) No. 3644 of 30th July 1870 *received under the Revenue Commissioner, Southern Division's endorsement No. 3271 of 3rd August* 1870, *from January* 1869 *to August* 1870.

No.	Names of the districts affected.	Situation.	Nature of the soil.	Name of the disease.	No. of cattle attacked.	No. recovered.	No. died.	No. still ill.	REMARKS.
1	Malwan ...	Near the sea-shore ...	Sandy ...	Peya, or otherwise called nurud peya.	662	163	497	2	When the animal is being attacked by this disease it refuses food, discharges watery matter from mouth and nostrils, lays back its ears, its mouth becomes dry, there comes on a swelling in the neck, it drinks water, and begins to shiver.
2	Deogurh ...	Near the Syhodree range, and also the sea-shore.	Hilly, sandy, rocky, and level.	Ditto ...	350	...	350	...	
3	Rajapoor ...	Ditto ..	Ditto ...	Ditto ..	790	401	389	...	
4	Rutnagerry ...	Near the sea-shore ...	Hilly and sandy ...	Ditto ...	...	...	...	...	
5	Singmeshurn ...	Near the Syhodree range.	Rocky, hilly, and level	Ditto ...	136	32	104	...	
6	Chiploon ...	...	...	Ditto ...	...	...	...	...	
7	Gohagur ...	Near the sea-shore ...	Rocky and sandy ...	Ditto ...	254	...	254	...	
8	Dapoolee ...	Near the sea-shore, and also the Syhodree range.	Rocky and hilly ...	Ditto ...	511	43	462	6	
				TOTAL ...	2,703	639	2,056	8	

RUTNAGHERRY
W. Salmon, Esq.

POONA.
J. E. Oliphant, Esq.

From J. E. OLIPHANT, Esq., *Collector of Poona, to the Revenue Commissioner, Southern Division,*—(*No.* 2135, *dated Lanowlee,* 13*th October* 1870).

With reference to your circular endorsement No. 3291, dated the 5th August 1870, I have the honor to intimate, after inquiry, that no disease of an epizootic nature prevailed among the cattle in this district during the last 12 or 15 years, and that although no correct information can be obtained for the period previous thereto, it may be assumed from the reports received on the subject that the disease whenever prevalent was not of the nature referred to.

BELGAUM.
A. Grey, Esq.

From A. GREY, Esq., *Collector of Belgaum, to the Revenue Commissioner, Southern Division, Poona,*—(*No.* 1385, *dated Belgaum,* 18*th October* 1870).

With reference to your Circular No. 3291, dated 5th August 1870, I have the honor to submit copies of reports from the Frst Assistant Collector and District Deputy Collector, by which it will be perceived that the cattle disease prevails more or less throughout the district, and that there is a concurrence in the information which both these officers have obtained of the symptoms of the disease. It has very recently been brought to my notice that the disease among the cattle at Desoor, mentioned in Mr. Grant's letter, is of a very malignant type, and that the directions which have been given to separate the sick animals and to bury the carcasses of the dead cattle have been of no avail in checking the progress of the disorder which carries off nearly every animal attacked.

J. H. Grant, Esq.

From J. H. GRANT, Esq., *First Assistant Collector, to the Collector of Belgaum,*—(*No.* 68, *dated Belgaum,* 22*nd September* 1870).

With reference to your endorsement No. 1080, dated 9th August 1870, forwarding for report a Resolution of Government in the Revenue Department, No. 3644, on the subject of cattle disease, I have the honor to report as follows.

2. *Belgaum Talooka.*—The disease began about a month ago in the village of Desoor, and about two months ago in Gaddikurvinkope. It is called *heriberri* by the natives, and its symptoms are as follows:—The neck swells, saliva comes from the mouth, and a swelling forms in the eye. The animal always hangs its head down and refuses to eat. Great thirst ensues, and continues generally for a day and a half. Diarrhœa then sets in, the urine becomes tinged with red, or mixed with blood, weakness ensues, the animal falls down, remains so for a day or two, and then dies. Small portions of the entrails are passed with the dung and smell very badly. When the animal dies, the eyes retreat inwards and the tongue protrudes. If the dung gets on the body before the animal dies, it breeds small insects. The bladder has the appearance of having been destroyed, and the stomach is full of greenish water.

3. The disease is not general at present. In the two villages above mentioned 130 animals fell sick of it; of these, 100 died, 20 are reported as still sick, and 10 recovered: death ensues from 4 to 20 days after the first attack.

4. The village of Desoor above mentioned is on a hill, and the soil is red, and there is a little jungle in the vicinity. The soil of the Gaddikurvinkope is partly red and partly black; there is no jungle near the village.

5. The origin of the disease is not known. It seems that notwithstanding the great thirst felt by the sick animal, water should not be given, as it hastens death. The remedy used by the natives is the juice of the leaves of the *neem* tree (*beon*), and it is said to be successful; occasionally they also use the *karibeon*.

6. *Sumpgaum Talooka.*—Symptoms the same as above. The disease was slightly prevalent in Naglapore and a few villages in Belavadi Karyat. The ground is open, some of the soil is red and some black. No jungle in the vicinity. The disease is not restricted to any particular localities, consequently any village is liable to it.

7. *Purusgud Talooka.*—In this talooka there are a variety of diseases among cattle, but *heriberri* is the chief; they are as follows:—

1*st, Kundroga,*—caused apparently by not giving sufficient grass or water, or by giving bad water; it lasts about three days, and is sometimes fatal; it is more or less prevalent always; when attacked the animal trembles a good deal.

2*nd, Bairoga.*—Tongue becomes black and the surface of it is covered with ulcers, saliva flows, and the animal can neither eat nor drink. A cure is often effected by rubbing the tongue with *nelli kayi* (phyllonthus emblica).

3*rd, Kálberri.*—The hoofs get full of small insects, induced probably by treading in mud and dung; the cure is effected in about two months by various substances which are poisonous to the insects.

4*th, Heriberri.*—Chiefly prevalent in the hot weather; three-fourths of the animals ttacked die; after death the flesh becomes black.

BELGAUM.
J. H. Grant, Esq.

8. I have not been able to procure precise information as to the number of animals attacked, but in the Beedee Talooka, where there is no disease at present, the number of animals that died is stated to be as follows :—

In 1867, 77 animals died
In 1868, 688 ,,
In 1869, 332 ,,

all from *heriberri* or *doddaberri*.

9. I have included the Belgaum Talooka in my report, the information regarding it having been called for from this office, and supplied at the same time as the rest.

From VISHNOO PURUSHRAM, Esq., *District Deputy Collector, to the Collector, Belgaum,*—(*No.* 128, *dated* 28*th September* 1870). Vishnoo Purushram, Esq.

With reference to your letter No. 1090, dated 9th August 1870, I have the honor to report as follows with respect to the three Talookas in my charge :—

Athni Talook.

In Murgundi and Ainapoor, a cattle disease called *nebin byani* or *mhani byani* is prevalent. Cattle are as suddenly attacked therewith as men are by cholera. The causes of this disease are unknown.

During the attack the cattle neither eat nor drink. They become dull, and frequently pass reddish urine. The dung stinks much. Death generally follows 4 or 5 days after the attack. During illness they appear very uneasy and restless.

* * * * * *

The soil in Murgundi and Ainapoor is partly sandy and partly black light soil.

In Murgundi there were ten cases and in Ainapoor one ; all proved fatal. There are no more cases.

The Mamlutdars of Chikodi and Gokak report that no cattle disease of any description is prevailing in their districts at present, and they have consequently not supplied the statistical information required. The following information has been obtained by them from old people regarding cattle diseases that had formerly appeared in their districts :—

Name of disease.	Symptoms.
	Gokak Talooka.
Hirey byani...	The cattle do not eat. The blood is spoilt, and they pass watery stools of a red color. The eyes water, the body trembles, death follows in two or three days.

* * * * * *

From T. BOSANQUET, Esq., *Acting Collector of Sholapoor, to the Revenue Commissioner, Southern Division,*—(*No.* 2337, *dated* 18*th October* 1870). SHOLAPOOR. T. Bosanquet, Esq.

I have the honor, with reference to your circular endorsement No. 3261 of the 5th August last, to state that cattle disease is now and has been for some time prevalent in the Kurmulla Talooka of this district. I am not able to ascertain the number of cattle now suffering from it.

2. By "epizootic disease" I presume is meant "cattle disease" of any kind.

3. In the course of last year no less than 988 head of cattle appear to have died from cattle disease.

4. The disease most fatal is called *waryacha rog* or *mota rog*. The symptoms are—diarrhœa, running at the mouth, inability to eat, and sinking of the eyes. The body assumes a dark color. The duration of the disease is from one to three days.

5. I have presumed that *mota rog*, "great disease," is the same as *waryacha rog*, which would appear from its name to be an epidemic. In two of the Talookas the disease is spoken of as *mota rog*, of which running at the mouth is one of the symptoms.

SHOLAPOOR.
T. Bosanquet, Esq.

6. I will now answer Mr. Hallen's second question in detail. The names of the diseases mentioned as sometimes prevailing are as follows. With the exception of No. 2, they all appear to be of a fatal nature.

Disease.	Symptoms.	Duration.
1.—Waryacha rog or mota rog ...	Diarrhœa; body becoming of dark color; running at mouth; sinking of eyes, emaciation.	One to three days.
2.—Khoorkoot (hoof disease) ...	Mouth, tongue; and hoofs become affected. Inability to eat. Hoofs fall off. This disease is susceptible of cure if taken care of in time.	About fifteen days.

* * * * * *

7. The first named disease has prevailed mostly in the Baree and Kurmulla Talookas. It has prevailed slightly also in the Marrah and Punderpoor Talookas.

SATTARA.
J. R. Arthur, Esq.

From J. R. ARTHUR, Esq., *Collector of Sattara Division, to the Revenue Commissioner, Southern Division,*—(*No.* 3692, *dated* 21*st December* 1870).

With reference to your Circular No. 3291 of the 5th August last, I have the honor to inform you that diseases of an epizöotic nature prevail to a considerable extent in this district; but the information regarding their nature is exceedingly scanty, and the people appear to have no definite notion as to how they should be treated. The explanation they give with regard to diseases known by different names are so similar that it is difficult to determine whether the same disease is spoken of, or whether any distinction really exists. There is no information at all of any reliable kind as to the extent to which the different diseases prove fatal, nor can it be ascertained in what proportion recoveries occur.

2. There is in this district the usual variety of soil, and I do not find that the diseases are in any way regulated by their character. I would repeat, however, that the information is of the very vaguest description, and the only way in which it appears to me that trustworthy knowledge can be obtained is by deputing some professional person to make inquiry into the matter.

3. I annex a statement, however, which gives such particulars as are procurable.

[The statement furnished shows that foot and mouth disease, known as *lall*, and rinderpest, called *putkee* or *moosunda*, prevail in the district. C. P. C.]

CENTRAL PROVINCES.

Index of Records.

		Page.
1.	General Summary	579
2.	Letter from the Secretary to the Chief Commissioner, dated 3rd November 1870 (forwarding the succeeding correspondence)	582
3.	Tabular Statement exhibiting prevalence of cattle disease	583
4.	The Commissioner of the Nagpúr Division, dated 6th September 1870 ...	585
5.	Ditto ditto Jabalpúr Division	585
6.	Deputy Commissioner, Jabalpúr District, dated 19th October 1870	586
7.	Statement of diseases known in the Chindwara District, dated 3rd August 1870 ...	587
8.	Ditto ditto Hoshungabad District, dated 27th August 1870	588
9.	Ditto ditto Narsingpúr District, dated 30th September 1870	589
10.	Deputy Commissioner, Raipúr, dated 6th September 1870	589
11.	Ditto, Sambalpúr	590

GENERAL SUMMARY.

An isolated notice of cattle disease at Saugor in 1830 exists in a report on vaccination by Mr. Campbell, Superintending Surgeon, who says :—"It is worthy of remark that during the prevalence of the epidemic (small-pox) in this district, great numbers of cattle died of a disease which the natives distinguish by the same name which they use for variola, namely, *matah*." This note is interesting as showing that though detailed descriptions of murrains do not exist until very recently, there can be very little doubt of their prevalence before particular attention was directed to the subject. In the absence of any data on which to found a historical statement, it is thought better to prepare the following precis of information which has accrued within the last few years, according to the divisions of the province. The sources of information are, 1*st*, short notes in the weekly returns of rainfall published in the *Central Provinces Gazette;* and 2*nd*, the replies from District Officers, elicited by the Commission's letter No. 372, dated 14th June 1870.

1830.

NAGPUR DIVISION—(Districts *Nagpúr*, *Bhándára*, *Chándá*, *Wardhá*, and *Bálághát*). Cattle disease was noted as prevalent in the Nagpúr Tehseelee of the Nagpúr District in December.

1867.

Cattle disease prevailed slightly in Nagpúr in January and again in July. In Bálághát, talooka Badra, in January, April, and May, and in Chándá (Rajgurh Pergunnah and Mhool Tehseelee) in February, March, and April.

1868.

Foot and mouth disease (*chankhoorah*) was reported to prevail in the Mhool Tehseel of Chándá in April. Cattle disease was again reported in the Rajgurh Pergunnah of Chándá in September.

1869.

Cattle disease was very prevalent in the Chándá District throughout the year. In April it is reported to have appeared in the Burhampooree Tehseel, and subsequently in the Mhool Tehseel. It is reported as continuing to prevail in May and June, and towards the end of June has appeared in the Wurrora Tehseel. During July it is said to be on the decrease. On August 6th it is noted on the increase in Mhool, especially among buffaloes. The disease continued to prevail throughout August, September, October, November, and December, in which month a decline is noted. The name of the disease is not indicated.

1870.

Cattle disease also prevailed in the Bálághát District. In April foot disease was reported. In May small-pox broke out in the Sangee Pergunnah and Kionapore Talooka. In June the disease is noted as continuing. In July it is said to have broken out among the cattle in the north of the Dhunsoa Pergunnah. In the beginning of August it is noted as spreading; towards the end of the month it is noted as very prevalent and fatal. In September disease is said to be decreasing, and later on in the month to have nearly disappeared. In October and November "foot rot" is noted as prevailing in the Paraswara Tehseel.

The Commissioner of Nagpúr reports in his letter, dated 6th September 1870, that the bad diseases of cattle known in the Division are "small-pox," known as *matah* or *marai*, and *khooree*, foot and mouth disease. "Sporadic cases of the former occur from time to time in every district; but every 4 or 5 years the disease becomes epizöotic and carries off a large number of cattle." The symptoms described by Mr. Ramaswamy are,—at the first a flow of tears from both eyes, low spirits, and then purging; death takes place in from 3 to 5 days, and the mortality is put down at 75 per cent.

JABALPUR DIVISION—(Districts *Jabalpúr*, *Sagur*, *Dumoh*, *Seoni*, and *Mandla*). Cattle disease is reported from Sagur in August, September, and October.

1869.

GENERAL SUMMARY.

1870.

In September cattle disease (*bhonda*) is reported among buffaloes in some of the Khorai villages of the Sagur District. The prevalence of this disease is again noted in October. A sudden outbreak of "cow-pox" and disease of the hoof at Naraingunj in the Mandla District and the neighbouring villages is reported in August 1870. In the report for the week ending 1st October the following information is given:—"At Ramgurh, early in September, ten cattle were attacked with the disease called *patakna*—all fatal; no fresh cases at Pindrai. Fourteen head of cattle were fatally attacked with a disease called *ghat sarfal* (swelling of the neck) on 31st August, and 5 more on 24th September: no fresh cases." On 8th October it is noted that "12 head of cattle were fatally attacked by the disease called *gondha*, or cough, at Bijanra on 25th September; of these 2 died and 10 recovered; no fresh attack since. At Deolapúr 10 cattle were attacked with the above disease; 5 recovered and 3 died: no fresh cases." On 22nd October it is noted that at Dadha 12 cattle were attacked with cow-pox; 3 died and 9 recovered. At Kundra 25 head of cattle died from cow-pox: no fresh cases. Again, on 5th November, it is reported at Shopura, "30 head of cattle were attacked with a disease—name unknown; they throw up water and are suffocated; 20 died and 10 recovered."

The Commissioner of Jabalpúr gives a summary of information obtained from District Officers.

Jabalpúr.—Chechack or *matah* prevailed during the rainy season of 1869, also *patakna;* the former is evidently rinderpest, and in the latter there is giddiness and swelling of the throat: $\frac{1}{5}$rd or $\frac{1}{4}$th of the cattle of the district are said to have been carried off.

Under date 19th October 1870, the Deputy Commissioner reports the prevalence of these diseases in Tehseelee Moormara of the Jabalpúr District.

Sagur.—Two diseases called *ghorka* and *soorka* prevailed in 1869. The former seems to be rinderpest, and the latter pleuro-pneumonia.

Dumoh.—Epizöotics occurred in 1865-66-68-69, names,—*bhowra, sohagpoor, baikra,* and *chechack.* The latter two seem to be rinderpest.

Seoni.—No epizöotic disease prevails.

Mandla.—An elaborate tabular statement is forwarded, showing that cattle disease prevailed extensively in the years 1869 and 1870. The following is a summary of it:—*Poka* prevailed in 1869-70 in Talookas Tholpore, Niwaree, Manfee, Inplee, Burhars, Pundureeah; symptoms,—"the skin becomes scurfy and falls off, the saliva is excessive, and the bowels are severely purged;" duration four days; mortality,—in 1869, 704 died of 748 attacked; 1870, 53 died of 60 attacked.

Ghoorka prevailed in 1869-70 in Talookas Sagur, Manfee, and Bambinee; symptoms,—the neck becomes swollen, the head is in constant motion, and the animal refuses to eat and drink; duration 3 days; mortality,—in 1869, 56 died out of 62 attacked; 1870, 47 died out of 60 attacked. *Brynga* prevailed in 1869 in Talookas Mootfurkat, Mudmee, Madaquite, and Beejeygarn: symptoms,—gradual wasting away; duration, 4 months; mortality,—573 died of 901 attacked. *Matah* prevailed in 1870 in Talookas Gopee, Mootfurkat, Mudmee, and Indra: symptoms,—the animal becomes sluggish, the eyes close, blisters then appear; duration, 3 days; mortality,—127 died of 260 attacked. *Khoorah* prevailed in Talookas Ramnuggur and Ghoogree in 1869-70; symptoms,—the hoof gets sore; mortality,—in 1869 14 died of 165 attacked; 1870, 119 died of 211 attacked. *Naksoorka* prevailed in 1869 in Talooka Suftee: symptoms,—"head in constant motion, salivation;" duration, 3 days. The liver is said to be found inflamed and full of water *post mortem;* mortality,—10 died of 15 attacked.

Byha prevailed in Talooka Mootfurkat in 1869; symptoms,—the animal after two days' illness becomes mad and furious until it dies; mortality,—3 out 7 attacked. *Chupka* prevailed in Talooka Ghoogree in 1869-70: symptoms,—"there are ulcers on the tongue;" duration 4 days; mortality,—1869, 23 out of 166; 1870, 15 out of 134. *Poknee,* diarrhœa, prevailed in Talooka Ghoogree

in 1869-70; mortality,—1869, 6 out of 78; 1870, 18 out of 62. *Chechack*, cow-pox, prevailed in the same Talook in 1869-70; mortality,—1869, 7 out of 90; 1870, 4 out of 80; also *bhowra*, swinging of the head; mortality,—no death in 40 cases in 1869, and 5 deaths in 60 in 1870. From the above it is evident that rinderpest and foot and mouth disease are common in the district; the soil does not seem to make any difference as to the prevalence of the disease.

The other diseases seem to be owing to improper diet and to hydatid cysts. The deaths from all diseases amounted in these two years to 1,823.

NARBADA DIVISION—(Districts *Betul*, *Chindwara*, *Narsingpúr*, *Hoshungabad*, and *Nimar*). Cowpox is said to have prevailed in
1870. a few villages of Chindwara in September. Cattle disease existed in some villages of the Chamoar Patha Tehseel of the Narsingpúr District in October, and a few cases of cow-pox are reported in the same Tehseel in November.

In Betul disease is said to have prevailed slightly in June.

In Chindwara no general disease is said to have prevailed since 1848. Seven diseases of cattle are described by the Deputy Commissioner, namely, *maindh* or *kookera*, *goorgoora*, *panpriah*,—nature unknown; *matah* and *murree*, rinderpest, *bhowra* or *chucker*, and *turuck phasee*,—nature unknown.

In Narsingpúr small-pox is said to have existed in May and June 1869,
1869. and foot rot at various times. These diseases also existed in 1870.

In Hoshungabad cattle disease (rinderpest, foot and mouth disease, and pleuro-pneumonia) existed to a great extent in 1869 and 1870; disease is said not to have existed in Nimar of late years.

CHATTISGARH DIVISION—(Districts *Ráipúr*, *Sambalpúr*, and *Belaspúr*). Cattle
1868. disease broke out in the Moongeylee Pergunnah of the Belaspúr District in July, and was then carrying off large numbers; it continued to prevail in August, September, and October.

In October the disease broke out among the cattle in some villages of the
1869. Seoreenarain Tehseel. It continued to prevail till Decem-
1870. ber. In January it was prevalent in the Moongeylee Pergunnah. In August about 200 cattle died of foot rot and small-pox in the Seoreenarain Tehseel. In September its prevalence is noted in the Belaspúr Tehseel, and was again noticed in the Seoreenarain Tehseel in October.

The Deputy Commissioner of Ráipúr states in the appended letter that during 1868 and 1869 cattle disease has been very virulent, and that about a third of the district stock was lost. The disease also prevailed during 1870. He describes *matah* (rinderpest), *sawmha* (swelled throat), *bupra* (nature unknown), *chhye* (rinderpest), *khoorah* (foot and mouth disease), also *phurtree* (mouth disease); 13,466 cattle died in 1869-70.

The Deputy Commissioner of Sambalpúr reports that epizöotics always prevail in the district; cattle disease prevailed in 1869-70. He describes *matah* (rinderpest), *khoorah* (foot and mouth disease), *cherra* (rinderpest), and *sahosa* (hoven). He estimates the deaths at 2,000 within the last year.

1868. UPPER GODAVERY DISTRICT.—Cattle disease was
1869. reported in the Seroncha Talook in December 1868 and
1870. in January 1869. In November a few cases of foot disease occurred. In May 1870 some cases of cattle disease occurred.

The papers from the Central Provinces are appended in full, as they are interesting and have not hitherto been printed. It is very evident from them that disease among cattle is a very common occurrence in these parts, and that its study and prevention are subjects worthy of future attention.

CENTRAL PROVINCES. J. F. Muir, Esq.

From J. F. MUIR, Esq., *Officiating Assistant Secretary to the Chief Commissioner, Central Provinces, to the President, Cattle Plague Commission,*—(*No.* 2850—284, *dated* 3*rd November* 1870).

As directed by the Government of India (letter No. 3154 of 30th June 1870), I am to forward to you the information as regards the Central Provinces, asked for in your letter to the Secretary to the Government of India, No. 372, dated 14th June 1870.

2. The information is contained in the annexed tabular statement, in which are embodied the replies of the District Officers who had been called upon to report on the matter. The answers of some of them are enclosed in full, as, where the information supplied seemed full and interesting, the Officiating Chief Commissioner has thought you would prefer having the original papers sent to you.

3. The Officiating Chief Commissioner fears that the information now submitted is somewhat meagre, and that with reference to your 5th question about the numbers of cattle affected, &c., is hardly to be relied on.

4. But it must be remembered that the attention of the District authorities has but lately been directed to the subject, nor had returns been previously called for.

5. The Officiating Chief Commissioner, however, believes that the information now submitted contains much valuable and interesting matter, and trusts that it will be of some service to you in the inquiries you are now prosecuting.

Tabular Statement accompanying Assistant Secretary to Chief Commissioner's letter No. $\frac{2850}{284}$, dated 3rd November 1870.

	In the District of	Has any disease prevailed ever?	Is it now prevailing?	Vernacular names of diseases.	Symptoms.	Duration of attack.	Affected Districts.		Number of cattle attacked.	Percentage that died of those attacked.
							Situation.	Soil.		
See letter from Commissioner, Nagpur, annexed No. I.	Nagpúr ...	No; not, at all events, for some years past.	No.							
	Bhandára ...	A small number of cattle are annually affected.	...	Matah.						
	Chandá ...	Yes, during present year; also four years ago.	Yes.	Morai ...	Copious watery and sanguineous purging, loss of appetite, hot skin, constant flow of water from the eyes, blotches all over the body.	2 to 6 days ...	Brahmupurí & Mál Tehsils.	In all kinds of soil.	Supposed about 7,000.	75
	Wardhá ...	Yes, but not during present year.	No.	(1) Kuria ...	(1) Continual lying on one side; disinclination to eat.	(1) 5 to 6 days	...	...	...	(3) 80
				(2) Sur ...	(2) A protuberance in the side. ...	(2) About 15 days.				
				(3) Murree ...	(3) Bowels loose, disinclination to eat, drooping ears, body cold, mouth hot.	...				
				(4) Matah ...	(4)					
				(5) Manmorhee	(5) Neck gets crooked; will take no food ...	(5) In 5 or 6 days.				
				(6) Phoopsea...	(6) Difficulty of breathing; boils appear on the chest.	(6) In 4 or 5 days.				
	Bálághát ...	(1) Annually carries off a very large number of cattle.	...	(1) Small-pox	.....					
		(2) Ditto, especially in the hot weather.	...	(2) Khooree ...	(2) Soreness of feet, followed by purulent discharge from the posterior portion of the cleft of the hoof; the throat inflamed; small pimples appear on the tongue; sometimes the hoofs come off.					

Tubular Statement accompanying Assistant Secretary to Chief Commissioner's letter, &c.,—continued.

	In the District of	Has any disease prevailed ever?	Is it now prevailing?	Vernacular names of diseases.	Symptoms.	Duration of attack.	Affected Districts.		Number of cattle attacked.	Percentage that died of those attacked.
							Situation.	Soil.		
Jabalpur.	Jabalpúr ...	See letter from Commissioner,		Jabalpúr, No. 3.						
	Ságur ...									
	Dumoh ...									
	Seoni ...									
	Mandla ...									
Narbada.	Betul ...	Yes, slightly in June last...	No.	Thega or khoo-ree.	Sores in mouth, throat, and clefts of hoof, also neck swollen.	2 days ...	North-east of Betul.	Sandy ...	200	75
	Chhindwárá..	No general disease since 1848.	See Table No. 4 annexed.					For the most part stiff black cotton.	4,000	67
	Narsinghpúr..	Yes, especially small-pox in May and June 1869; also foot rot at various times.	No.	See Table No. 6 from Deputy Commissioner.						
	Hoshungabád	See Table No. 5.								
	Nimar ...	Not of late years ...	No.							
Chattis-garh.	Ráipúr ...	See letter No. 7 from Deputy Commissioner.								
	Sumbalpúr ..	See letter No. 8 from Deputy Commissioner.								
	Biláspúr ...	No, as far as can be ascertained.	No.							

No. 1.

From C. E. BERNARD, Esq., *Commissioner, Nagpúr Division, to the Secretary to the Chief Commissioner, Central Provinces,—(No.* 3660, *dated 6th September* 1870*).*

NAGPUR.
C. E. Bernard, Esq.

I have the honor to submit in original the replies of the Deputy Commissioner of this Division to the Cattle Plague Commission's questions, forwarded under cover of your letter No. 1854—189, dated 9th July.

2. It seems that no epizöotic disease has of late years attacked cattle in these parts, except the well-known diseases small-pox and *khooree*. The former disease is locally known as *matah* or *morai*.

Sporadic cases occur from time to time in every district, but every 4 or 5 years the disease becomes epizöotic and carries off a large number of cattle. Its symptoms are described in an enclosure to Captain Ricketts' letter. *Matah* (small-pox), when in an epizöotic form, appears to carry off 75 per cent. of the number of animals attacked. At present it is prevailing in the Chánda District, but the disease is not quite so virulent as it was a month or two ago.

3. The *khooree* disease seems to be of two kinds: one kind attacks the feet, and the other attacks the mouth and throat. The two kinds of *khooree* are sometimes regarded as distinct diseases. This disease sometimes yields to treatment if remedies are applied with sufficient promptness. This disease is not nearly so fatal as small-pox, and cattle become liable to it (the *khooree*) at particular times of the year.

4. It is not possible to offer any reliable figures showing the number of cattle which have died from these diseases, or the number which are now suffering from them.

No. 3.

From COLONEL J. K. SPENCE, *Commissioner, Jabalpúr Division, to the Secretary to the Chief Commissioner, Central Provinces, Nagpúr.*

JABALPUR.
Colonel J. K. Spence.

Adverting to your letter No. 1854—189 of the 9th July last, forwarding copy of a letter from the President of the Cattle Plague Commission, and requesting a report thereon, I have the honor to report as follows for the Chief Commissioner's information.

JABALPUR.—There are two diseases of an epidemic character which prevailed among the cattle of this district during the rainy season of 1869, and may be said to have been felt in every village. One is called by the natives *chechuck* or *matah*, the other *patakna;* in the former the cattle attacked are covered with pustules, the eyes are red and watery, and the bowels loose. In the latter the cattle seem overwhelmed with giddiness; when they attempt to stand or move they stagger; there is a swelling below the ears, and sometimes in the throat. In both cases food is refused, and the attack ends fatally within a week, unless the constitution is strong enough to resist the disease. The other diseases to which cattle are liable have never prevailed universally, and at present no cattle disease at all exists. No specific treatment is followed, nor have *post-mortems* been held. When cattle disease prevails as an epidemic, it is as common and fatal in the low black soil as in the dry gravelly tracts. It is estimated that from one-third to one-fourth of the total cattle of this district were carried off by the diseases above mentioned during their prevalence last year; but no actual statistics having been compiled, the loss only admits of being estimated. When an epizöotic disease prevails, its ravages are greatly aggravated from the manner in which healthy and sick cattle are herded and housed together, and if it could be impressed on the native mind, the urgent necessity for separation, a most important point would be gained.

SAGUR.—No cattle disease prevails this year. Last year during the hot weather it prevailed along the northern border of the district, not to any great extent, but a considerable number died. The disease which prevailed last year was called *ghoorka* by the natives; its symptoms are, running from the nose, cough, debility, and rapid emaciation; death ensues in from 15 to 20 days; if treated at once the animal often recovers; if neglected for a few days it generally dies. The *post-mortem* appearances of this disease do not seem very marked. The natives say that for two days they cannot tell the cause of death without opening the animal. Another disease which prevailed last year was the *soorka*, the symptoms of which are, laboured breathing, cough, and running at the nose; in its effects it is generally fatal; swelling of the glands of the neck is distinctly visible after death.

The locality in which the *ghoorka* first showed itself was on the borders of Lullutpore, in a hilly country, where the soil is chiefly of a light friable sandy nature. No reliable information as to the number of cattle attacked and recovered can be obtained, as no statistics exist.

JABALPUR.
Colonel J. K. Spence.

DUMOH.—Diseases of an epizöotic nature appeared among the cattle in the years 1865, 1866, 1868, and 1869. There are, however, none prevalent at present. The diseases that appeared are known by the following names:—

Bhowra, sohagpooria, baikra, and *chechuck.* The first is by far the most fatal, and the animal dies an hour or two after it has been attacked. The symptoms are, the animal becomes giddy, staggers, and falls on the ground. *Sohagpooria* is called by that name apparently because the disease was originally brought from Sohagpore, in the Rewa Territory, about 25 years ago. The symptoms of this disease are,—a sore in the throat and slimy matter issuing from the mouth; the duration of attack is about four or five days; the disease is contagious. In the *bhowra* disease it is estimated only 10 per cent. recover; in the *sohagpooria* 50 per cent; and in the *baikra* and *chechuck* about 90 per cent.

SEONI.—No epizöotic disease now prevails, nor, for at least a generation back, is there any tradition of such a malady.

MANDLA.—A disease of an epizöotic nature has prevailed in some parts of the district. The accompanying statement furnishes answers to queries II, III, IV, and V put by the Cattle Plague Commission. (See page 580. C. P. C.) I trust the Chief Commissioner will be pleasedto consider the information herewith furnished as satisfactory.

Copy of a letter No. 3959, *dated* 19*th October* 1870, *from the Deputy Commissioner, Jabalpúr, to the Commissioner, Jabalpúr Division.*

Referring to previous correspondence on the subject, I have the honor to bring to your notice a report received yesterday from the Tehseeldar of Moorwara, stating that the disease called the *chechuck* or small-pox has broken out among the cattle in Pergunnah Bijeragogurh; that it first made its appearance about 20 days ago and had carried off about 100 cattle, and some 50 more were suffering from the disease, which seems to prevail chiefly among buffaloes, and that it is on the increase at present.

The Tehseeldar further reports that the natives do not seem to understand any remedial measures, but abandoning the cattle to their fate, devote themselves to propitiating the deity of the small-pox by *poojah.*

I have issued orders to the Tehseeldars to impress on the natives the necessity of entirely separating the sick cattle from the rest, and housing them, as far as possible, separate from those that are free from the disease.

In my letter No. 3297, dated 19th August, I have noticed the epizöotic character of this disease, and another known among the natives by the name of *patakna* particularly.

If the Cattle Plague Commission could recommend any treatment for the cattle suffering from such diseases as are common in India, the natives might be instructed to adopt curative measures.

No. 4.

Statement of diseases of cattle known in the Chindwara District.

No.	Disease of an epizöotic nature distinguished by its local name.	Symptoms.	Duration of attack.	Remarks.
1	Maindh or kookera	An abscess forms inside the throat, causing suffocation ...	1 to 2 days ...	These diseases prevail principally in the Mokheir, Chowrye, and Pandhoorna Pergunnahs. The soil is generally rich black cotton. [Disease 1, 2, 3, and 7 cannot be identified from the descriptions; 4 and 5 are probably rinderpest, and 6 gid or sturdy. C. P. C.]
2	Goorgoora	A similar abscess to that in *maindh*, accompanied by feculent discharge from mouth and nostril.	6 to 12 hours ...	
3	Pampriah	Fever and excessive dryness of the skin, so that it actually crackles.	6 to 12 hours ...	
4	Matah or small-pox	Eruptions over the body, and fever	6 to 8 days ...	
5	Murree	Excessive diarrhœa, from which they gradually sink ...	6 to 12 hours ...	
6	Bhowra or chucker	A general uneasiness and giddiness on the part of the animal, with discharge from mouth and nostrils.	From 5 to 6 days ...	
7	Turruck phasee	Swelling of the dewlap	6 to 12 hours ...	

CHINDWARA,
The 3rd August 1870.

(Signed) E. M. PLAYFAIR, *Major*,
Deputy Commissioner.

CHINDWARA.
Major E. M. Playfair.

No. 5.

Statement of cattle diseases in the Hoshungabad District.

Name of Tehsilee.	Names of diseases.	Did any plague exist lately, or does any now exist?	When did it last appear?	How long did it last?	What were the signs of that plague?	How many cattle were infected?	How many died?	Proportion of infected to cattle existing.	What is the common opinion about the plague? When did it appear and disappear?
Hoshungabad.	Phopsa ...	This plague was heard lately to have existed.	June 1869...	3 months ...	This seems to be a disease of the lungs. An animal attacked appears to breathe with difficulty, ceases to eat or drink, staggers in walking, is purged violently for 3 or 4 days, and then dies.	18,932	5,172	23 per cent.	Generally this plague is said to attack in the hot weather. Appeared in June 1869 and continued till the end of August.
Sohagpore.	1. Small-pox ... 2. Bega ... 3. Bhowra ... 4. Churh ...	None exists at present; lately they did.	Feb. 1870 ...	4 „ ...	Attacked with disease No. 1, the animal does not eat or drink for 4 or 5 days, and dies. Disease No. 2: in this the animal is attacked by an eruption in the feet, the tongue becomes blistered and there is a constant flow of saliva from the mouth, gives up eating and drinking; lasts 18 or 20 days. Disease No. 3: in this the animal constantly throws about its head and falls down, and dies in half an hour. Disease No. 4: in this one leg swells, and it dies in 3 or 4 days.	4,000	1,500	5 per cent.	Appeared in February 1870 and lasted till May 1870.
Seoni ...	1. Churh ... 2. Rokti ... 3. Small-pox ... 4. Baghea ... 5. Phopsa ... 6. Heabillai ... 7. Ghat surrup	Some disease existed lately during the month of Phalgon, Cheyt and Saurun 1926, or 1869.	Jan. 1870 ...	4 „ ...	*Churh* No. 1: as above described. No. 2: symptoms are the same as of *Bhowra* Sohagpore. No. 3, small-pox: the animal's coat becomes rough, water flows from the eyes, it is purged violently. No. 4, *baghea:* in this the neck and head swell, animal ceases to eat or drink. No. 5, *phopsa:* as above. No. 6, *heabillai:* cough and trembling. No. 7, *ghat surrup:* something like a knot is created in the throat, continues swelling daily, and the animal at last cannot breathe.	9,000	6,000	21 per cent.	No. 1 is caused by use of unwholesome water. No. 2 commonly breaks forth in the cold season. No. 3, in hot weather. No. 4, no fixed season, and is also a contagious disease. Nos. 5, 6, and 7, the same as No. 4. Bad season and use of impure water is the cause of all these diseases.
Hurda...	1. Dhadharya... 2. Rokti ... 3. Small-pox ...	None exists or existed lately.	March to end of July 1869.	5 „ ...	No. 1: saliva flows from the mouth, there is much difficulty in breathing, the remedy is to sear with hot iron on the breast, and water boiled with neem leaves is to be administered. Nos. 2 and 3: the same as above.	3,000	2,000	3 per cent.	No. 1 appears in the cold weather. Nos. 2 and 3 appear in the hot and weather, cease at the commencement fo the rainy season.

HOSHUNGABAD,
The 27th August 1870.

(Signed) C. H. PLOWDEN, *Captain,*
Offg. Deputy Commissioner.

No. 6.

Statement of cattle disease which prevailed in the Narsingpúr District during the year 1869-70.

NARSINGPUR.
J. F. Beddy, Esq.

Name of disease as called by the natives and the symptoms, also duration of attack.	Names of districts affected, their situation, and the nature of the soil.	Number recovered.	Number died.	Number still ill.
Bekhra or Gorphoota or Baigo, a disease in the hoof, dangerous when neglected; duration from 15 to 25 days. The cattle suffer intense pain during continuance of disease, and give over feeding.	In Tehsilee Narsingpúr cattle in 11 villages were attacked; some of the villages are on the hills, others at foot of the hills, while others are in the plains. Description of soil, black cotton clay, rocky. The disease is contagious.	1,169	281	888
Ditto ...	Tehsilee Chaourpatha, 614 villages attacked, &c. (as above.)	224	185	39
Matah, small-pox ...	Tehsilee Narsingpúr, 9 villages attacked. Description of soil, black cotton clay, rocky. The disease is not confined to any locality; it is just as virulent in black cotton soil villages as in villages on the hills, where there is very little soil.	616	197	419
Ditto ...	Tehsilee Chaourpatha, 1 village... ...	70	30	40
	TOTAL ...	2,079	693	1,386

NARSINGPUR,
The 30th September 1870.

(Signed) J. F. BEDDY,
Offg. Deputy Commissioner.

No. 7.

From CAPTAIN H. I. LUGARD, *Deputy Commissioner, Raipúr, to Commissioner, Chattisgarh,—* (*No.* 3125, *dated 6th September* 1870).

RAIPUR.
Captain H. I. Lugard.

With reference to your No. 2814 of the 13th July last, I beg to report as follows:—In the Raipúr District six kinds of epizöotic disease attack the cattle. During 1868 and 1869 these diseases were very virulent, and it is estimated that about one-third of the total number of cattle died. During the current year two of the six kinds have appeared, but the attacks are of a mild nature and recoveries easy. These diseases are locally called (1) *matah* (pox), (2) *sawmha*, (3) *bupra*, (4) *chhye*, (5) *khoorah* (hoof disease), and (6) *phurtree*.

1. *Matah* (pox) is a disease common to all India, and its symptoms of attack do not differ. It sets in with loss of appetite, hot skin, and great weakness. Its duration is 12 days, in which time it either ends favorably or kills the animal. No medicine is given nor any precautions taken in separating the animal attacked from the herd. This disease appears in the hot months with vigour, but in a mild form; it exists throughout the year in black loam soils. The *post-mortem* examinations show the blood pale and watery, and the flesh loosely attached to the bones and easily separable.

2. *Sawmha.*—This disease takes its name from its being virulent in the month of Sawun or August, but it appears in three periods of the year, Chait (April), Kartick (November), and Sawun (August). Its attacks are confined to the young cattle, and its duration is from 15 to 20 days. The throat is attacked; it swells and prevents the animal from taking nourishment.

3. *Bupra.*—This is a mysterious disease, but it is supposed that the throat is the principal part affected; death supervenes in 3 or 4 days. The animal attacked resigns food and droops its head; the breathing is rapid and appears to cause great pain. Branding along the stomach and glottis is the only remedy applied. The *post-mortem* examination shows the blood to be pale and liquid and the stomach swollen.

4. *Chhye.*—This is a great scourge and very epidemic. It commences with a resignation of food and drink on the first day, with hard breathing and water-flow from the eyes and nostrils, and purging on the second day, and on the third the animal dies. The body is very hot, whilst the ears remain cold; prostration is so great that the animal is insensible to cutting and branding. The treatment consists in slitting the ears or cutting off one inch from the tips, and beating them with a switch until the flow of blood is copious. A bolus of

RAIPUR. Captain H. I. Lugard.

salt, horse-radish, root bark, chillies, butter, milk, ghee, eggs, and red ochre (*geroo*) is then given. The *post-mortem* shows the blood-vessels over stomach distended with blood.

5. *Khoorah.*—This is the common hoof disease; it makes its appearance by a loss of appetite, caused by the tongue and throat swelling; a week after, the hoofs get sore and swell; the animal is unable to walk and even to stand, and this causes great emaciation. The duration of the disease is 15 days if the hoofs are not attacked by maggots, and then it takes a long time. The disease is very infectious, and is not confined to any soil in particular.

6. *Phurtree.*—This is a disease resembling thrush: the throat gets swollen and covered with pimples. Though infectious, it is not dangerous, as the milk of the "thoour" or common garden milk-hedge effects a cure, and a small quantity rubbed into the throat suffices. The *post-mortem* feature is a swollen liver and stomach.

These diseases are not limited to particular soils, but appear all over the district. No. 4 is the most dreaded, and appears to be more destructive on clayey soil. During 1868 it committed great havoc along the Jonk river, although there was no deficiency of fodder and water. The following figures show the number of attacks and recoveries during 1869-70:—

Number of cattle attacked, 45,529.	Number died, 13,466.
Number recovered, 11,066.	Number still suffering, 20,997.

SAMBALPUR. Captain M. M. Bowie.

No. 8, DISTRICT SAMBALPUR.

Answers to questions put by Cattle Plague Commission.

1. Cattle disease in various forms and of an epizöotic character seems always to prevail more or less in this district or in the surrounding Gurjahi States. Almost every year reports are received from one part of the district or another that some disease has there shown itself and that numbers of cattle are dying. Last year the disease prevailed throughout the greater part of the Uterteer and nearly the whole of the Dokhinteer, and it is still prevalent in the Gurjahi States of Patna and Kalahamedy and in some parts of the Uterteer, more particularly towards the State of Gaugpoor.

2. The following are the names of the various diseases prevalent and the symptoms, as described by the people of the country:—1*st, Matah.*—When an animal is attacked by this disease the first symptom is a refusal of all food for 2 or 3 days and there is great thirst; after this an eruption similar to that of small-pox in the human subject breaks out over the whole body; this is followed by violent purging and the animal dies about the 4th or 5th day. There is another form of this disease called *semohia matah*, in which the same general symptoms are observable, except that instead of an eruption over the whole body, there is only swelling and inflammation of the glands of the throat and great fever. 2*nd, Khoorah.* The first symptom in this disease is a sore which appears in the cleft of the hoof. Similar sores shortly appear in the other hoofs and then in the mouth, and the animal attacked is very often dead in some five or six days, though sometimes the progress of the disease is much slower. The wet season is that in which this disease generally shows itself, but it is at the same time extremely infectious; if it once shows itself in a herd the whole are almost invariably attacked; there is, however, a larger proportion of recoveries among the cattle attacked with this disease than among those attacked by any other form of cattle disease. 3*rd, Cherra.*—The first symptom in this disease, as in *matah*, is that the animal attacked refuses its food. On the second or third day violent purging sets in. There is a watery discharge from the eyes and nostrils, and the disease terminates generally fatally about the fifth day. It is said by some that this is the same disease as the *matah* before described, but this is doubtful. 4*th, Lahosa.*—In this disease also the first symptom is absention from food; there is then a watery discharge from the nostrils and eyes, with obstinate constipation and complete stoppage of the urine. The belly swells and the disease then generally terminates fatally about the fourth day. In some parts of the country, and among the lower classes, this disease is called *choltibooja.*

3. *Post-mortem* examinations of the bodies of the animals dying of these diseases have never been held in this district, and no information on this point can be given.

4. As I have said before, one or other of the above forms of disease are generally present in some part of the district or in the surrounding Gurjahi States. The nature of the soil throughout the country is generally light clay and sand; but as rice is the staple crop cultivated, a considerable part of all cultivated lands is under water for a great part of each year.

5. The Tehsildar estimates that in the Khulsa part of the district upwards of 3,000 head of cattle must have been attacked with one or other of the above diseases during the past 2 years, and that of these, 2,000 died and the remainder have recovered or are still ill; no estimates can be made as to the number of cattle that have been attacked or have died in the Gurjahi States and in the zemindaries.

M. M. BOWIE, *Captain,*
Offg. Depy. Commr.

BURMAH AND THE STRAITS.

HISTORICAL SKETCH.

The earliest account of disease among cattle in this portion of the Indian empire is contained in the medical histories of the expedition to Arracan in 1825. Mr. J. Grierson writes in the "Transactions of the Medical and Physical Society of Calcutta" (Vol. II, 1826) "on the epidemic fever of Arracan, with a sketch of the medical topography of that country." After describing the situation of Arracan and the great sickness which occurred among the troops, European and Native, in July 1825, he says :—

1825.

"Cattle had begun to be in the same deplorable state; the camels, with the exception of one or two miserable skeletons still retaining life, had all perished; horses, elephants, and bullocks daily diminished in number" (p. 209).

Mr. R. U. Burnard writes on the same subject in Volume III of the same "Transactions," p. 84. He describes the fever which proved so fatal among European and Native troops employed in Arracan from June to November 1825.

"The climate of Arracan," he says, "appears to be equally hostile to cattle; elephants, (from Bengal and Hindostan,) horses, sheep, and bullocks died in great numbers. * * * * Professor Coleman says that the horse is not the subject of fever, *i. e.*, of a regular succession of cold, hot, and sweating stages. In Arracan it certainly was, and it was a disease of great fatality; the mode in which it terminated was usually, by effusion in the chest."

In the same volume there is another paper on the same subject by Mr. W. Stevenson, in which the following passage occurs :—

"On our entering Arracan (the capital) no quadrupeds were to be seen, with the exception of a few kept more as objects of curiosity than utility; whereas on our arrival at Sandoway, the chief town in the southern division of the province, we found abundance of cattle, apparently owing to the superior nature of the country. Of Sennar, says Bruce, 'there is a constant mortality among the children in and about the metropolis,' and he further observes, 'no horse, mule, or any beast of burden will breed or even live at Sennar or many miles around it; poultry do not live there; neither dog nor cat, sheep nor bullock can be preserved a season there. They must all go every half-year to the sand. Though all possible care may be taken of them, they die in every place when the fat earth is about the town during the first season of the rains'—p. 381, Vol. 6. Such in some degree was the case in Arracan. Bullocks died in great numbers, and horses and elephants shared the same fate" (p. 89).

None of these observers gives any description of this fatal disease among the lower animals, and no subsequent account exists of murrain in Arracan.

Staff Surgeon G. B. MacDonell describes an outbreak of foot and mouth disease in Tenasserim and Moulmein in 1839. An account of this is given in an extract from Dr. Gilchrist's book at page 539.

1839.

The symptoms described are those of foot and mouth disease, and the mortality seems to have been considerable.

In the 8th volume of the "Transactions of the Medical and Physical Society of Calcutta" there is a most interesting account of an epidemic and epizootic in Malacca in the year 1840 by Mr. Thomas Oxley (Part II, p. 328).

1840.

Cholera it appears broke out in the settlement in the month of October, and there were about 100 deaths in a population of 14,000. After describing this, Mr. Oxley goes on to say :—

"Nothing remarkable occurred in the healthfulness of the settlement until about the month of July, when an epizootic disease broke out amongst the swine. During this and the following month it is calculated that upwards of 2,000 pigs within the precincts of the town fell victims to this hitherto unheard of disease. Animals apparently quite well in the evening were dead in the morning: many died of a sort of dysentery, generally fatal on the third day. First day, the sickness commenced by the animal refusing food, and showing great eagerness for drink, followed by a purging either of blood or a mere watery fluid; both sorts of purging appear to have been equally fatal.

HISTORICAL SKETCH.

"The symptoms in other cases commenced, as usual, with rejection of the food, succeeded by convulsion, which generally carried the animals off in a few hours. The great majority of the swine perished in these fits, as they were denominated. The disease did not unfortunately excite my attention until the period passed when opportunities offered for *post-mortem* examinations, but those of the Native Portuguese who cut up several of the carcasses informed me that the heart was in a remarkably congested state in all of them; they describe it as having been quite black. The epidemic having swept off nearly all the swine in the settlement, next fell upon the horned cattle; it is doubtful whether the disease which raged amongst these latter took its origin from the swine. I am rather disposed to believe that it was brought here by a gentleman who purchased, cheaply, a number of sick cattle at Singapore; the disease broke out immediately after their importation, and when I heard of their introduction, I immediately prognosticated the result, from what I had witnessed a few years ago at Singapore.

"This unfortunate occurrence took place in the latter end of the month of July. The disease, the symptoms of which were pretty much the same as that which attacked the swine, consisted in refusal of food; a moping, listless appearance in the animal, followed by a purging, sometimes of pure blood, at other times of merely a watery fluid, with frequently a sanious discharge from the nostrils, terminating fatally in from three to six days; and being eminently contagious, it spread throughout the country, killing the buffaloes and other horned cattle by hundreds, and depriving many of the poor natives of their only means of livelihood. The Malays, at all times apathetic, bereft of their only property, became utterly indifferent to consequences, and permitted the carcasses of the buffaloes to rot where they died; or throwing them a few fathoms into the jungle, then left them, regardless of the pestilential effluvia generated by their decomposition. In these situations it frequently occurred that the carcasses were preyed upon by the "feræ naturæ," such as tigers and wild hogs, and not the least remarkable circumstance in the history of this epidemic is the effect of the above food upon these wild animals, the bodies of several having been found lying dead in the jungles. I have positively ascertained that the bodies of at least *four tigers* were found dead in the above manner, besides several hogs."

Dr. Oxley then goes on to describe how the Portuguese, on an animal sickening, killed it and disposed of the flesh, which was eaten with impunity until the breaking out of the cholera in October, when the violence of that disease fell upon the Chinese who had eaten the tainted pork.

There can be little doubt that the murrain which Mr. Oxley describes was a very intense form of rinderpest, which seems to have been almost "panzootic" in the settlement.

1865-66.

In the year 1865-66 a very careful and complete investigation into the cattle murrain of Burmah was made by Veterinary Surgeon T. P. Gudgin, of the 2nd Dragoon Guards. His elaborate and excellent report discloses an immense amount of disease in the province and great losses therefrom. Mr. Gudgin travelled through the localities in which murrain prevailed, saw the cases on the spot, conversed with the inhabitants, and performed 23 *post-mortem* examinations, of which he gives a good summary account. As regards the *origin* of the murrain, he heard, as usual, various theories regarding its importation from different localities—Ava, the Shan territories, Siam, &c.,—but he was unable to arrive at any positive conclusion on this head. He inclines to the belief that the murrain was not indigenous, in the sense of its being spontaneously generated by meteorological and climatic conditions, but has little doubt that the "poison" during the last few years has been always present in some parts of the country, ready to burst out in epizöotic form under favoring conditions.

As regards the *history* of the murrain, he could assign no date to its earliest appearance in the province. He found that it had existed there for more than 60 years, prevailing mostly during the dry months and early parts of the rainy season, in some places appearing yearly, in others after a lapse of three, five, ten, and eighteen years, decimating herds, killing buffaloes by hundreds; appearing more frequently and in severer form in districts where there is more cattle trade and movement of stock than in isolated and secluded villages, and becoming more frequent in its visitations. The disease was very severe in 1864, still more so in 1865, in which year the loss of cattle is put down at 100,000, and still prevailed in 1866. Mr. Gudgin states that "the cultivation of the rice crops was seriously threatened by the diminution of the number of horned cattle." He

gives illustrations of the behaviour of the disease from his note-book, and relates many cases, and gives clear instances of importation, noting also what has been so abundantly observed elsewhere in India, that though the people are convinced of the contagious nature of the murrain, they either totally neglect, or make a mere pretence of, separation. HISTORICAL SKETCH.

As to the *nature* of the murrain, Mr. Gudgin considers it analogous to, or identical with, the rinderpest then raging in England. It exhibits the same symptoms, attacks the same structures, runs its course in the same period, is characterised by the same amount of mortality, and displays the same *post-mortem* lesions. These symptoms and *post-mortem* lesions he details minutely, and at length: they differ in no essential particular from those so frequently described elsewhere in this report.

The *mortality* is estimated at about 85 per cent. of attacked. No estimate is given of mortality among stock, but from the few instances given of losses in particular villages, 50 and 60 per cent. appears to be a fair and not exaggerated estimate. The native *names* of the disease are not given, but they are said to be similar to those used elsewhere in India, indicating "plague," "sickness," "cholera," "diarrhœa," and "internal small-pox."

Mr. Gudgin also mentions *other diseases,* more particularly foot and mouth disease, splenic apoplexy, quarter-evil, and sturdy. He saw one case of the latter.

The breed, breeding, housing, feeding, watering, and work of cattle in Burmah are described in this thoughtful paper, and practical suggestions as to the measures, preventive and curative, necessary, in the writer's estimation, to prevent the spread and limit the fatality of this murrain carefully detailed.

These suggestions have in view the repression of the disease by a careful system of segregation, the removal of the healthy and splitting up of herds into segments, and the medical treatment of the sick in secluded hospitals.

Mr. Gudgin also places considerable stress upon attention to breeding and hygiene, and recommends the training of native youths in the Veterinary art, and their instruction in all that relates to the care of healthy stock and the cure of diseased stock. No official report has been received from Burmah subsequent to this, but there is every reason to believe, from information privately obtained, that the state of matters revealed by Mr. Gudgin's paper is not exceptional, and that a lack of reports is to be explained rather by an absence of inquiry than an absence of disease. Such, at least, is the conclusion which has many times been forced upon the Commission elsewhere, and while the natives of the country, ordinarily, so uncomplainingly and quietly endure great losses of horned stock, and no agency exists whose special duty it is to inquire into these matters, the result is not to be wondered at.

THE ANDAMAN ISLANDS.

HISTORICAL SKETCH.

The insular position of this Settlement, its comparatively recent occupancy (1858), and the accurate history which has been kept of all events which have transpired there since then, render the study of any cattle plagues which may have happened extremely interesting. The same remark applies to cholera, whose outbreaks in this island have been recorded by Dr. C. Macnamara in his well-known treatise on Asiatic Cholera. It is very clear that cattle disease was not *indigenous* in the Andaman Islands, because there were no cattle there among which the disease could originate; and, as will appear from the sequel, disease did break out among cattle on more than one occasion, and then was stamped out by judicious repressive measures.

1864-65. The first annual report on the Settlement is for the year 1864-65. It is stated that all supplies and live-stock were obtained from Calcutta, and that cattle and sheep were kept at "Aberdeen" and Viper Island, where the best grazing was to be found. Guinea and dhoob grass were being planted to improve the pasture.

1865-66. Three hundred and twenty-seven head of cattle and 3,697 sheep were imported from Calcutta and British Burmah during the year. There was mortality among sheep twice in July in the height of the south-west monsoon, and in April in the height of the hot weather. The cause of mortality is not noted.

The planting of Guinea grass had proved a great success, but not so dhoob grass. The supply of fodder was noted sufficient, and the establishing of an experimental cattle farm contemplated.

1866-67. The cattle farm at Aberdeen was considerably extended during this year and several new sheds constructed. A new farm was opened out at Perseverance Point. The cultivation of Guinea grass continued successful, but dhoob grass is not mentioned. All the slaughter cattle were obtained from Burmah. It is noted that "the cattle have been generally healthy. All our slaughter cattle are old, worn-out creatures, and never appear very fat. The deaths which occur among them arise from old age, and are not, it would seem, attributable to disease or the effects of the climate. The sheep on the other hand do not thrive here. At all times mortality among them is very heavy, and sometimes it increases to a very high rate. The very hot and the very wet months are particularly baneful to them; added to this, the voyage from Calcutta has a most injurious effect on the animals, from which they do not recover for nearly two months after their arrival, during which interval numbers die off."

A cattle show was held for the first time this year, when it was noted that considerable progress was evident in breeding and feeding cows, goats, and poultry.

1867-68. The cattle farm at Perseverance Point is noted as a success, and the cultivation of Guinea grass seems to have been extended.

The farm at Aberdeen was not so well reported on, specially as regards the sheep, and the low situation and damp are said to have caused large mortality among the latter. No epizöotic is noted during the official year.

1868-69. "In the month of September 1868," Dr. Rean writes in his annual report, "cattle disease appeared among the Commissariat cattle and carried off many. It had been introduced from Burmah, and threatened to spread among the horned cattle here; had it done so, the loss would have been very great, and the advance of the

HISTORICAL SKETCH. Settlement towards becoming independent of foreign meat supplies much retarded. Fortunately, by the exercise of much vigilance, the disease did not extend, and in future great care will be observed in preventing communication between newly-arrived cattle and those already here." Dr. Rean has forwarded the report of the Committee which was appointed to investigate this matter, which is full and interesting.

In his annual report for 1869, Dr. Rean remarks as follows with regard to the stock of the Settlement :—

"*Cattle.*—A good number of cows have been imported from Penang during the year; they are of smaller size and inferior to those from Burmah or India, and contrast most unfavorably with the animals formerly imported, and now the property of numerous ticket-of-leave prisoners. The magnificent pasturage which can be obtained here should enable us in a few years to rear as fine a class of cattle as can be met with in India, and with equal economy. No cattle disease has broken out among the herds this year as happened last, and it is hoped by care in the importation of these animals, and watchfulness on their arrival here, we shall not have any murrain among them again.

"*Sheep.*—In former years the mortality among sheep on ship-board and after their arrival here was very great, but during the past year much improvement has taken place; more care has been exercised in selecting a finer class of animals and greater precautions taken on thevoyage. They are well-housed on arrival, and the experience now gained in their management seems sufficient to secure an immunity from any great loss among them for the future.

* * * * * * * * *

"*Pigs.*—These animals thrive remarkably well and increase greatly."

In the annual Administration Report for 1869-70 a census of stock on 1st April 1870 is given, namely, 858 cows, 264 male calves, 340 female calves, 2,240 goats, and 729 pigs; 129 cows were sent to the Nicobar Islands and were doing exceedingly well. It is noted that wild buffaloes exist in the latter—"the produce of some cattle left here by the Danish settlers." In April some cattle received from Calcutta introduced an epidemic of foot and mouth disease, from which three of the imported cattle were suffering. It will be observed that the existence of this disease in and around Calcutta at that time was noted by the Commission (p. 11). It spread during the month and caused four deaths in old and weakly animals. Isolation was being adopted and remedies applied.

1870.

In the report for the month of May it is noted that nearly all the cattle on the Settlement were attacked, notwithstanding precautions. Sixty-seven casualties had occurred, which in a stock of about 1,400 gives 4 per cent.—a considerable loss.

In the report for June it is noted that the health of the cattle had improved, and that only some of the weaker had yielded to the disease; 20 deaths are noted.

The foregoing notes have been gleaned from the Administration Reports, and indicate the value which would attach to a more detailed history of the introduction of horned stock, and subsequently of disease, into these islands. It may fairly be concluded that the two forms of murrain observed in the Andamans—rinderpest and foot and mouth disease—were not of spontaneous origin there, while the great endemic diseases, fever, diarrhœa, and dysentery, are as rife in the Settlement as in other malarious localities. It is equally clear that these diseases were introduced by diseased stock; and if the same amount of care were taken in endeavouring to prevent their spread, it would appear that foot and mouth disease is more infectious and penetrating than the other, but details are wanting on this point. It is obvious that a quarantine farm, station, or island would save the stock of the Settlement from risk, and while disease is so rife on the continent of India, and its introduction so possible, nayprobable, and a proved fact on two occasions, the increasing stock of the Andamans and Nicobars ought to be thus protected.

Since these remarks were written, and while the sheets were passing through the press, the following valuable communication was received in reply to a letter asking for further information. It is given *in extenso*.

PORT BLAIR AND NICOBARS. Colonel H. Man.

From COLONEL H. MAN, *Superintendent, Port Blair and Nicobars, to the Secretary to the Government of India, Home Department,*—(*No.* 1458, *dated Port Blair, the 2nd March* 1871).

I have the honor to forward a report from the late Executive Commissariat Officer, Captain Laughton, on the subject of the cattle diseases which have prevailed at Port Blair.

2. It will be seen that the cattle belonging to the Commissariat and ticket-of-leave convicts suffered in about equal proportions from the rinderpest, but that the former succumbed in far greater numbers than the latter from the attacks of the foot and mouth disease. In fact the convicts repudiated entirely the treatment recommended by the Committee, and, apparently, with reason, as they scarcely lost any cattle during this epidemic. I was told, indeed, that they had escaped intact, but Captain Laughton says that ten died out of their herds.

3. The cattle belonging to ticket-of-leave men are generally in first rate condition, being well fed and cared for, and no doubt this greatly aided them in resisting the attacks and effects of this disease.

Captain A. F. Laughton.

From CAPTAIN A. F. LAUGHTON, *Deputy Assistant Commissary General, to the Superintendent, Port Blair and Nicobars,*—(*No.* 1307, *dated Port Blair, the 10th February* 1871.)

I have the honor to acknowledge your letter No. 1331, dated 28th January, forwarding for report letter* No. 624, dated 26th December, from J. H. B. Hallen, Esq., Staff Veterinary Surgeon, President, Cattle Plague Commission, to the Secretary to Government, Home Department, on the subject of the several epidemics which have visited these islands.

* Herewith returned.

2. In reporting on these epidemics, and in giving statistics, I propose to take a historical view of the subject, to such extent as my memory serves me, and the records of my Office and other information I can glean permit. I shall further support my account with copies of Proceedings of the Boards of Enquiry which have reported upon the plagues.

3. Before proceeding to do this, I will commence by stating that the diseases which have visited us have been of two kinds,—one similar to the rinderpest, and the other to the foot and mouth disease; in speaking of them, therefore, I shall use these terms. I will also observe that we have had only two epidemics of an alarming nature, the others have been mild or circumscribed in their effects. The epidemics which have visited us have been as follows:—

Date of epidemic.	Number of cattle in Settlement.		Duration of epidemic.	Description of epidemic.	Number of Deaths.		No. attacked approximate.	
	Government.	Private.			Government.	Private approximate.	Government.	Self-supporters.
			Not known.					
1863 or thereabouts ...	...	30	Slight ...	Foot and mouth	Not many.		Not many.	
No record.							No record.	
September 1868 ...	255	300	6 weeks ...	Rinderpest ...	50	60	150	150
October „ ...	255	300	2 „ ...	„ ...	2		5	
December „ ...	255	300	2 „ ...	„ ...	8		20	
April 1870 ...	536	900	2 months ...	Foot and mouth	87	10	500	500
January 1871 ...	450	1,000	1½ weeks ...	„ ...	2	...	20	

besides a few solitary cases of foot and mouth disease during the intervening hot seasons.

Note.—The information regarding "private cattle" is only approximate.

4. In the early days of the Settlement there were not many cattle in the place; in fact, on my arrival here, in April 1865, they were very scarce, so much so that, with little more than 3,000 convicts, the supply of milk was very limited and high in price; moreover, milk did not then form an item of the convict's diet as it now does. The area of cleared land in those days was so circumscribed, and the grazing available so limited, that it would

Port Blair and Nicobars. Captain A. F. Laughton.

have been impossible to import large herds, inasmuch as the small stock then on hand had to depend to a great extent on imported fodder. I calculate the cattle on the Settlement in April 1865 not to have exceeded 200.

5. It will thus appear that any epidemic before this time must have been of little import, and as there were only two or three cow-keepers in the place, would hardly have impressed itself on the memory of people. One of the cow-keepers tells me that the foot and mouth disease broke out between 1862 and 1864. I have therefore set it down in the list above as 1863. He lost one or two cows, but I cannot learn to what extent the disease existed, and conclude it was very mild, but sufficient to justify its being placed in the list of epidemics which have visited us.

6. From April 1865 the grazing ground available increased, and a few boxes of Guinea grass were received, by nursing which I was enabled to extend it first over an area of a few yards, from that over an acre, then 36 acres, and finally over some 150 acres. With this increase in fodder and other grass which was planted, we were able to import cattle to a greater extent, but with the exception of a few cases of foot and mouth disease during the hot seasons, no epidemic visited us until September 1868, when I calculate the cattle on the Settlement numbered some 555.

7. In September 1868 the rinderpest was introduced with some cattle which arrived from Burmah on the 1st of that month; one bullock died on the 7th out of the recent arrivals. A buffalo on the Settlement was attacked and died on the 15th; two bullocks, one recent arrival, and the other old stock, on the 16th. The mortality then increased as described in the Proceedings of the Committee attached, marked A. The casualties which occurred are noted in the list above, but no record exists of the numbers attacked. As nearly as my memory serves me, I should think that one-third of those attacked died and two-thirds recovered.

8. As soon as the disease appeared, all precautions were taken for isolation; cattle used for carriage of provisions from station to station were called in and isolated. Every animal with symptoms of disease about it was separated, and I was in constant communication with the Senior Medical Officer, and adopted all remedies, preventatives and disinfectants, he advised. The Senior Medical Officer was the President of the Committee which assembled.

9. In the Proceedings are detailed the remedies applied, I need not therefore repeat them, beyond stating that salines and oil were used, but without much apparent benefit; indeed, we looked more to preventing the spread of the disease than to curing those already attacked. Warm mashes were given to the sick cattle.

10. It was feared, from the nature of the attack, that it would be far more virulent than it eventually proved. The disease restricted itself, as nearly as I can recollect, as far as Government cattle are concerned, to Aberdeen; and the casualties were not as numerous as was anticipated, the greater number of victims having been young calves, *i. e.*, 35 out of 50 casualties were calves, which rapidly succumbed, while the strong animals appeared to suffer far more from the attack, battle longer against it, and in most instances recover. The duration of the epidemic was about six weeks.

11. The self-supporting cow-keepers suffered great loss; the disease spread across the water to Ross, how it is impossible to say, but certain it is that one man lost 4 head out of 6, another 5 out of 30, and many others lost one, two, or three each. Many cases appeared at Haddo; one man lost his whole herd of 10. These are, however, the worst cases, and I set down the total loss of self-supporters at about 60.

12. One cause of the great loss among self-supporters' cattle is that this class of men have not any facilities for isolating their cattle. Many keep their cattle in sheds behind their huts, from which they are never let out, subsisting entirely on grain and fodder brought in by their owners. In some instances the men have seen their cattle sickening, and, with the apathy usual to these people, have made no effort to separate the healthy animals, and so have lost all.

13. After this epidemic, cattle received into the Settlement were disembarked on an isolated spot, and there kept until it was proved they had no disease amongst them.

14. In October 1868 a batch of cattle arrived from Burmah; one bullock died on board just on arrival, and one was suffering evidently from the rinderpest. They were kept isolated, and notice sent to all self-supporters to keep their cattle clear of the place. The disease does not appear to have extended itself.

15. Again, on the 25th December 1868, the *Calliope* arrived with cattle, this time from Calcutta. The cattle were evidently suffering from the same disease, for on the 26th one cow died, and seven more during the next week or two. The disease, however, did not spread.

16. Thus the rinderpest was imported three times between September and December 1868, but it has not shown itself again since that time. Indeed, we have been very free from sickness until the hot season of 1870, when the foot and mouth disease broke out.

Captain A. F. Laughton.

17. As stated before, the foot and mouth disease appears to show itself in the hot seasons after periods of drought. I am inclined to think that it does so spontaneously, as it has sometimes done in a few solitary cases.

18. In this instance there is a probability that it was imported from Calcutta by two Australian cows purchased for Government. The Committee assembled at the time were of this opinion. The two cows and 25 slaughter cattle were landed in April at Aberdeen, the slaughter cattle being kept at the old farm for the sake of isolation, and the Australian cows sent up the hill to the new farm, as no danger was apprehended from them, having been purchased from a private stall.

19. The foot and mouth disease showed itself a few days later, first in these two cows, and then among the cattle isolated in the new farm. Every precaution was taken, as in former epidemics, for isolation, but, nevertheless, the disease spread itself throughout the Settlement to every station on both sides of the water, and it is this makes me believe that its origin may have been spontaneous, and I am the more inclined to this opinion, as the same disease has again broken out spontaneously, as I shall show further on.

20. The disease spread, as I said, throughout the Settlement. Nearly every animal, Government and self-supporters', was attacked. In itself it does not appear to be a dangerous sickness, though we lost a good many for reasons I shall explain.

21. Whilst in the case of the rinderpest self-supporters appear to have suffered more than Government cattle, in this case Government cattle seem to have suffered most; this I attribute to the fact that a large number of cows which had been imported from Penang were in young at the time, and the disease had the effect of producing premature birth in a very great number of cases, causing much loss both among the cows and the young. Again, the voyage caused many of the cows to give birth too soon, and the calves being young and weak were unable to contend against disease. We thus lost in all 67 animals from the disease and about 20 more after recovery from the weakness produced by it, whilst the self-supporters lost in all about 10; but no means of recording cases of mortality among private cattle exist.

22. I now come to the disease which has just broken out since I have made over charge, being relieved; and as no cattle have been received since October 1870, it is evident that it must be of spontaneous origin, and is attributable, I believe, to the lengthened drought, seeing we have not had rain since November last, and probably that the germ of the disease is in the islands.

23. The disease does not appear virulent. It commenced on the 30th January 1871; 20 head of cattle have been attacked in all, 18 are recovering, 2 deaths have occurred, and no fresh cases since 3rd February.

24. The principal remedies used in the foot and mouth disease, besides the free and abundant use of dry-earth and disinfectants, have been, for the feet an ointment made of bluestone, tar, and lard; and for the mouth, first washed with tar and salt water, then Condy's fluid. Diet—rice conjee.

25. In the disease now among the cattle, I understand that the same remedies are being adopted by my successor.

26. In conclusion, I beg, in reference to the several points alluded to by Mr. Hallen, to annex, in regard to paragraph 2, clauses A and B, a statement marked D, showing the number of cattle received, dates of receipt, and places from whence imported.

27. The information called for in the remaining clauses noted by Mr. Hallen has all been given in the body of my letter above, or in the Proceedings of the Committees, attached, marked A, B, and C.

A.

Proceedings of a Committee appointed to inquire into the cause and nature of the sickness existing among the cattle at Aberdeen, in compliance with letter No. 1110 *from the Superintendent of Port Blair, dated the 26th September* 1868.

Proceedings of Committee.

We proceeded to Aberdeen without delay, accompanied by the Commissariat Officer. We ascertained from Lieutenant Laughton, Sub-Assistant Commissary General, that, as a rule, the horned cattle have been very healthy at this Settlement, only a casualty occurring occasionally, which is not unusual among so large a number as are housed together here, and for the chief part imported animals.

PORT BLAIR AND NICOBARS. Proceedings of Committee.

2. It appears that the Steamer *Arracan* brought down a lot of cattle on the 1st of September from Burmah, and on the 7th one of these died, being the first death for some weeks; on the 5th a buffalo died, and on the 16th two bullocks, one of which has also come in the *Arracan;* a calf died on the 13th and another on the 14th, and three calves that were taken sick recovered; on the 23rd another calf died, and on the 24th three calves died.

The Commissariat Officer, seeing that the mortality was unusual, requested the President to visit the cattle with him early in the morning of the 25th, which he did, as well as in the evening and again the next morning, and on the afternoon of the 26th with the members of the Committee.

3. The President had thus several opportunities of seeing the animals; and as the deaths on the 25th were high, careful *post-mortem* examinations were made to ascertain the nature of the disease and the cause of this outbreak, and on each subsequent visit the dead animals were similarly examined.

4. We inspected the sick cattle which had been isolated from the healthy, and found a bullock and some calves in the hospital. The appearance of the animals was that of debility and dulness; the head hung down, the eyes were half-closed and lustreless, and the beasts did not evince the least inclination to move; they had lost their appetites, and the temperature of the body appeared lower than usual. From some a glairy mucus exuded from the mouth, and a little from the eyes, the angles of which were slightly excoriated; no ulceration was detected in the mouth, but the breath had a sickening odour; there were frequent evacuations from the bowels of a thin greenish mucous appearance, containing occasionally flakes of white matter and of blood; animals that had suffered longer from the disease passed more blood; urine, it was said, was passed, and of a natural character. We ascertained that the earliest symptoms the keepers noticed were loss of appetite and diarrhœa; other premonitory signs, such as increased heat of body or accelerated respiration, may exist, but required some skill to detect, and were perhaps overlooked. Calves appear to be more readily attacked, and to possess less vigour of system to control the disease than full-grown animals, as they succumb after a shorter period.

5. The *post-mortem* appearances of all these animals presented but little variation, and, after inspecting a few, it could be predicted, almost to a certainty, what would be found in the others. In some animals a distention of the abdomen takes place before death, and in others it is absent. The organs which are affected are the lungs, kidneys, liver, and glands of the intestines—the brain and spinal cord were not looked at. In the lungs inflammation to a greater or less degree was always found, generally circumscribed in extent, and giving the portion involved a splenic appearance; the liver showed signs of great biliary congestion, and the gall-bladder was much distended. The kidneys also were more or less congested, and the intestines were very vascular, and on being opened, either deposit or ulceration of the intestinal glands invariably existed. The blood was of dark appearance, with little tendency to coagulate, a condition showing a profound organic change in that fluid, and to which all the other lesions may be regarded as secondary in the causation of the disease. All the animals were not examined in the throat and fauces, but in those that were, no ulceration or deposit was noticed.

6. Guided by the evidence we have given, we can arrive at no other conclusion than that the disease the cattle are suffering from is of a contagious character and of serious import. To report fully on the subject would demand a lengthened investigation, but we think the facts we have ascertained warrant us in recording our opinion :—

1*st.*—The cause of the disease was the arrival of an infected animal from Burmah, whereby it was communicated to others.

2*nd.*—That the disorder is of a decidedly contagious nature, and demands the most energetic measures to prevent its spread.

7. The recommendations we would advise to prevent its extension and to check it, which have been already communicated by the President to the Sub-Assistant Commissary General, and for the most part are in practice, are,—the immediate separation of all animals showing the least symptom of disease; the prevention of any communication by the attendants or animals with the other stations where there are cattle; the most perfect cleanliness and ventilation of the buildings in which the animals are kept; a very free use of disinfectants, and the immediate removal of all secretions, and the burial or destruction of the bodies of all dead animals; no removal should be made along roads where other cattle frequent, and as perfect isolation as possible should be maintained between those which have been liable to become diseased and those hitherto unexposed. The present hospital is in too close proximity to the cattle shed, and it would be desirable if a building could be found at a greater distance.

8. In the use of disinfectants there are two varieties, those to purify the air, and those to neutralize the secretions. For the first purpose, the exposure of tar to a high temperature, whereby its fumes can be diffused and counteract those invisible elements which generate

zymotic disease, and burning of sulphur are the most potent and most readily available here; for the second, the liberal use of lime, MacDougall's powder, chloride of zinc, dry-earth, sulphate of iron, and Condy's fluid. Every evacuation should be instantly covered with one of the above and removed to a distance, and every vessel used should be thoroughly cleansed before being employed again. The walls of all the buildings should be whitewashed and tar used freely about the wood-works.

9. The large number of cattle belonging to self-supporters should be prevented from coming near a grazing ground where the Commissariat cattle have been, and no other animals should be permitted to come in contact with the cattle in any way exposed to the disease.

10. In the treatment but little can be done: tar water may be given, warm mashes, salines, carminatives, turpentine and oil, &c., according to the symptoms, and the President will be happy to co-operate with the Commissariat Officer in this matter and assist him with his professional knowledge; but our faith in the efficiency of these measures is small, compared to the importance we have attached to the others we have indicated above.

(Signed) W. H. REAN, M. D., *Surgeon, Senior Medical Officer,* } *President.*

„ J. H. FRASER, *Captain, Assistant Superintendent,*

„ H. F. DAKEYNE, *Captain, Officer Commanding Troops,* } *Members.*

B.

Proceedings of a Committee assembled by order of COLONEL MAN, *Superintendent of Port Blair, to report on the sickness amongst a batch of cattle landed from the "Calliope" on the 25th December* 1868,—*dated 4th January* 1869.

The Committee proceeded to Haddo on the morning of the 31st December to examine the cattle which had been placed in the Commissariat shed there, for the purpose of isolating them from the other animals on the Settlement, a practice which has been adopted since the appearance of the cattle disease at Aberdeen some months since.

2. It appears from the statement of the Commissariat Officer that one cow died on the 26th, one on the 28th, one on the 29th, and one on the 31st, and nine cows and two bulls were sick when we visited them, and four have since died.

3. We examined the animals, and found them to have symptoms similar to what we have noticed among diseased cattle before. There was running from the eyes, nose, and mouth, with hoarseness of the breathing, loss of appetite, a dejected appearance, and voiding of frequent semi-fluid and unnatural evacuations from the bowels. One cow lay dead at the time of our visit, and a *post-mortem* examination was made, the result being to confirm the opinion that the disease was of a contagious nature, and not to be attributed to the change on board-ship, or exposure to cold or deprivation of proper food.

4. The Committee would recommend the adoption of precisely similar measures to those carried out on the occasion of disease of a contagious nature having been introduced from Burmah, and which had the effect of checking the increase of sickness among the rest of the same batch of cattle, and preventing its extension to the animals on the Settlement.

5. The details of the precautions to be taken, the treatment to be adopted, and the importance of preventing any communications with healthy cattle on the Settlement, having been fully entered on in Proceedings of previous Committees, and already in the instance adopted by the Commissariat Officer, it is unnecessary to particularize them at length again.

(Signed) W. H. REAN, M. D., *Surgeon, Senior Medical Officer,* } *President.*

„ G. RANDALL, *Lieutenant, In charge of Viper,*

„ A. J. N. WATTS, *Assistant Surgeon, Detachment 2-24th Regt.,* } *Members.*

C.

PORT BLAIR AND NICOBARS.
Proceedings of Committee.

Proceedings of a Committee appointed by the Superintendent, Port Blair, to enquire into the following points suggested by the Acting Deputy Assistant Commissary General, dated 17th May 1870:—

1. To trace the origin of the foot and mouth disease which has broken out among the cattle.

2. To suggest any further remedies, should any be considered necessary, over and above those already adopted.

3. To detail the casualties which have occurred.

4. To report upon the condition of the 25 slaughter cattle received by the *Madras*.

5. To report upon the condition of Mysore cows received by the *Ethiopia*.

1*st*.—The origin of the foot and mouth disease. It appears that the cattle at Port Blair during almost all the month of April were in good health, no unusuale sickness or deaths being noted, four cows only having died, and they were old and weakly. On the 19th of April there arrived by the Steamer *Madras* two Australian cows and 25 slaughter cattle from Calcutta, and on examining them the following morning, it was found that the two Australian cows and one of the slaughter bullocks walked lame; not much attention was paid to this, as it seemed to be simply the result of the voyage which had produced tenderness of the feet, but it got worse daily, and on the third day the mouth became sore, and a mucous discharge constantly exuded, the animals at the same time refusing all food. There can be no question that these animals had the disease, and they were the first in which it was detected. In one of the Australians it was particularly severe, and the animal has since died. The next appearance of the disease was in the cattle and the sheds adjoining that in which these cattle were placed, and from them it has generally spread to most of the Commissariat cattle on the Settlement, with the exception of the 25 that came in the same steamer, one only of which referred to above has been infected.

2*nd*.—To suggest any further remedies for these contagious diseases have been so frequently detailed, that we consider it unnecessary to enumerate them, and the internal and external applications already in use seem sufficient for the cure of the disease in the majority of the cases. We have only to urge the greatest attention to cleanliness, and as perfect isolation as possible of both cattle and attendants from those cattle on the Settlement not affected.

3*rd*.—To detail the casualties which have occurred. The mortality up to the 10th May has been 18 cows and 8 bullocks from this disease, and the cattle which have died have been principally those which came from Penang, which may be explained by there being very few others at present on the Settlement. Those animals which are old and weakly are less liable to withstand the disease than the young and strong, and it has been principally among the poorest animals of the herd that the mortality has fallen.

4*th*.—To report upon the condition of the 25 slaughter cattle received by the *Madras*. These animals are of small size; some of them are not in very good condition, but the majority appear well. At the time of our visit they were eating their food heartily, and the greater number being apparently young, there is every prospect of their gaining flesh here. Up to this date, although they came in the same vessel with the Australian cows, it is singular that none have taken the disease except the one landed with it.

5*th*.—The condition of the Mysore cows. These cows are evidently of pure breed; they are small, but very nice in form, shape, and size. The batch consists of 1 bull and 20 cows and 1 bull-calf. Two are sick, suffering from looseness; the remainder, though somewhat thin, possibly from the effects of the voyage, look healthy and feed heartily. The majority are young animals and are likely to improve after a short residence. They have not yet become affected with the prevailing disease, and are kept in a distant place.

(Signed) W. H. REAN, M. D., *Surgeon, Senior Medical Officer*, } *President.*

„ M. PROTHEROE, *Captain*, } *Members.*

„ F. A. DEROEPSTORFF.

D.

Statement of the number of Cattle received at Port Blair from April 1865.

Month and date.	Number of cattle.	Place from where received.
1865.		
July	50	Moulmein.
August	20	Rangoon.
October	50	Calcutta.
"	25	"
"	61	Rangoon.
November	30	"
"	20	Moulmein.
1866.		
January	32	Rangoon.
"	10	Moulmein.
"	50	Calcutta.
"	25	"
"	10	Moulmein.
February	21	Rangoon.
"	49	Calcutta.
"	36	Moulmein.
March	10	Rangoon.
"	30	"
April	10	"
May	107	"
June	60	"
November	20	"
December	170	"
1867.		
January	40	Rangoon.
March	20	"
June	73	"
August	82	"
October	34	"
November	69	"
December	51	Moulmein.
1868.		
January	2	Rangoon
February	40	"
March	148	"
April	50	"
June	32	"
September	62	"
October	50	"
November	30	Calcutta.
"	50	Rangoon.
December	60	Calcutta.
1869.		
January	26	Rangoon.
"	60	Calcutta.
February	30	Rangoon.
March	35	"
April	35	"
"	100	Penang.
June	34	Rangoon.
"	22	Penang.
July	40	Rangoon.
October	81	Penang.
December	492	"
1870.		
February	2	Penang.
April	25	Calcutta.
May	34	"
June	41	"
August	22	Madras (Hornsey cattle).
"	30	Rangoon.
November	75	"
TOTAL ...	2,973	

CEYLON.

SUMMARY OF THE REPORT OF THE CEYLON CATTLE DISEASE COMMISSION.

Summary of Report of Cattle Disease Commission.

Though the Government of Ceylon is distinct from that of the continent which it adjoins, and events occurring there may be considered foreign to the concern of an Indian Commission, still the results of a very carefully conducted investigation into the cattle murrains prevailing there, by a Commission specially appointed for that purpose, are so interesting and important, that it has been thought best briefly to epitomise the excellent report which was drawn up on this subject, so as to bring the principal facts revealed and conclusions arrived at into relation with those contained in this report, in order that the whole subject may be presented in its utmost completeness, and every available light thrown upon the questions connected with it. The prevalence of murrain in this island was not unknown previous to the appearance of this report. An interesting paper on the subject is contained in the Journal of the Agricultural and Horticultural Society, Vol. I, page 235. This paper, written by Mr. J. Lambert, refers to an epidemic prevailing in 1842, and it is evident that at that time murrain was very common in the island. The Ceylon Cattle Plague Commission consisted of a Civilian, a Medical man, a Veterinary Surgeon, and a Maha Mudliyar. Its constitution was therefore very similar to that of the Indian Cattle Plague Commission. Its labours commenced in April 1868, and the report is dated October 1869. Six journeys were made to different parts of the island, the conditions under which stock existed examined, their diseases studied, and the evidence of natives, planters, and officials recorded regarding these. Written statements and mortuary returns were also called for and obtained. The inquiry was therefore practical and complete, and the information recorded is ample and intelligently placed in the general report. The Commission enter rather fully into questions connected with cultivation, care of stock, breeding, pasturage, housing, &c. As compared with Bengal, their descriptions exhibit a vastly inferior picture with regard to each of these particulars, and they show convincing cause for energy in the way of improving agriculture and stock. As regards *diseases* of stock, they found rinderpest and foot and mouth disease very common, and it is to the former that their chief attention was directed.

The *nature* of the disease they confidently assert to be "identical in its leading features with the rinderpest of Europe and India." They note the general absence of skin eruptions, but state that the Veterinary Member had observed this feature in previous years. They also comment on throat disease, which has been such a prominently observed and described malady in many of the reports printed above. They believe this to be a form of rinderpest, because in all the cases of it examined by them they found the other more peculiar and characteristic signs of rinderpest present. Distended stomach and staggers are also noted as prevalent forms of disease. It is curious to note the absence of black quarter, pleuro-pneumonia, and cyst disease, which have been so pointedly described on the continent of India.

As regards the *history* of murrains, the Commission could not trace out any early record, or fix on any period of origin; but it appeared from oral evidence that murrain existed during the Singalese period. They concluded also that up to 1840 its visitations were comparatively mild, but that since that year "disease made its appearance with greater frequency and violence and with more fatal results." This, they remark, may have been owing to the rapid extension of coffee planting and the more active importation, movement, and more intimate association of cattle consequent thereon.

Summary of Report of Cattle Disease Commission.

As regards *mortality*, they note that during the three years ended 1867 the average reported yearly loss was not less than 70,000 head, giving a money loss of £60,000. The stock of the island is not estimated, but taking it at one million, apparently an excessive estimate, the yearly loss would amount to 7 per cent. It is noted that "the value of a buffalo or bullock has in many localities been doubled within the last few years," and that cultivation is seriously impeded in numerous instances, owing to loss of cattle by disease. It also appears that coffee cultivation is in Ceylon depriving cattle of pasture land, as rice cultivation is in Lower Bengal. The effect of drought and bad grazing is prominently dwelt on as predisposing to murrain.

The *contagiousness* of both forms of murrain is accepted as an indisputable fact, and a principle upon which preventive measures must hinge. The various means and modes by which the disease may spread are also enumerated.

As regards *treatment*, preventive treatment is assigned the most prominent place. Isolation, segregation, and disinfection are the main features of the plan proposed. The primary agent of this repressive system is the village head man, to whom, under penalty for neglect, immediate report is to be made; he is to take immediate steps on assuring himself of the necessity in the way of preliminary separation. The agent of the district is to be informed at once, and on him will rest the burden of future measures, provided the early steps have been imperfect or ineffectual.

The hospital treatment recommended is an early dose of salt and sulphur, carbolic acid, water, "frequent feeds of thick rice congee" and counter-irritation in throat cases.

The advantage of giving discretion to local agents who know the circumstances of the district is indicated, and a legislative enactment is recommended, having for its objects—

1. Quarantine for new arrivals (14 days, and a license to travel at its expiry).
2. No cattle to graze on crown pastures without license.
3. No bull above one year old to be allowed to graze on public pasture ground.
4. Castration by the European plan.
5. Owners to report sickness to head man who inspects, segregates, and reports to agent.
6. Locality to be placed in quarantine and cattle movements through it prevented.
7. This restriction to be removed only by Government agents or competent authority.
8. Hospitals, medicines, and keepers to be provided and appointed.
9. Owners to pay for keep and treatment.
10. Tavelams to be subject to inspection and restriction if necessary.
11. Rules suitable to each province to be made by the agent and proclaimed.
12. Finally, the appointment of a special officer with suitable qualifications, and the training of a special native agency to put these principles into practice are recommended.

The foregoing is a brief sketch of the Ceylon report, which, *mutatis mutandis*, reveals very much the same conditions as regards stock and their diseases as the foregoing pages. The conclusions and recommendations are therefore valuable aids in arriving at a solution of the great problem of prevention. The report differs from the Madras reports in giving only results of inquiries and suggestions as to future action, and no record of any action adopted or work done. This should undoubtedly be the object and burden of all future records of contagious murrains among cattle.

NEPAL.

PREVAILING DISEASES OF CATTLE.

Letter from Dr. D. Wright.

The following note on this subject has been communicated by Dr. D. D. Wright, Residency Surgeon at Katmandoo. It confirms the evidence recorded at Darjeeling with regard to Thibet, showing that murrains are common occurrences on these hills, and, moreover, adds another link to the chain of evidence which proves that the Terai is a "home" of cattle plagues.

"The diseases of the cattle here are six in number:—

1.—*Sore mouth.*—The animal is unable to graze, and saliva and froth flow from the mouth. The disease is infectious. In the first three days nothing is done in the way of treatment, after that *chook, i. e.* lime juice, thickened by boiling, is applied to the sores and given also internally. The disease is seldom fatal.

2.—*Foot Disease, khoraha.*—The animal is lame from sores between the hoof, and cannot walk. The disease is infectious and spreads rapidly among cattle. The treatment adopted is to make the animal stand daily in water for some time, and then to apply the juice of garlic. If maggots make their appearance, the pounded leaves of the peach tree are applied.

3.—*Diarrhœa and dysentery.*—This disease is very infectious, and is always fatal. The symptoms are,—sunken eyes, dry mouth, and bloody motions; no treatment is known to do any good. If there is merely watery diarrhœa, then gunja, salt, and goor are given daily in equal parts along with some rice. The dose of the mixture given is one tola weight.

4.—*Khoon ka bimari, blood disease.*—The symptoms are,—flatulency and constipation, retention of urine, staring coat, and drooping ears. The only treatment adopted is to give the animal the *ujmoda* or *ajwain* plant to eat, which produces a discharge of urine and dung.

5.—*Fever.*—This is considered a fatal disease and there is no treatment for it. Buffaloes when attacked by fever are frequently bathed in a tank or river, and generally recover.

6.—*Catarrh.*—The treatment for this is the same as for murrain.

"The infectious diseases are generally brought into the valley by the herds of buffaloes and cattle that come from the Terai and Bhootan.

"Such is all the information I can get out of my learned native, and the result of it all seems to be that both foot and mouth disease and the rinderpest are common enough in Nepal, and are known to be contagious, and to be imported from the neighbouring districts.

"The foot and mouth disease was prevalent during the past year, but just now the valley is free from disease."

APPENDIX No. III.

SELECTED STATISTICAL STATEMENTS.

STATISTICAL STATEMENTS.

INDEX.

		Page.
1.	CALCUTTA DAIRIES AND OILSHEDS.—Sickness and mortality during 1868 and 1869 ...	613
2.	DIAMOND HARBOUR.—Statistics of 1868-69-70	620
3.	Do. do. Statistics of 1870	622
4.	SATKEERAH AND BARASET.—Statistics of 1870	622
5.	CHOOADANGAH.—Statistics of 1870 obtained through the Police	623
6.	CHOOADANGAH.—Statistics of 1870 obtained from Mr. Hills, Indigo Planter ...	624
7.	POOREE.—Statistics of 13 villages in 1869-70	627
8.	ASSAM.—Statistics of 1869-70 furnished by the Commissioner	628
9.	DEBROOGHUR.—Abstract of mortality among cantonment cattle in 1869	630
10.	ASSAM.—Statement founded on personal inquiry of Commission	631
	Conclusion	635

No. 1.

Return showing the sickness and mortality in some of the Calcutta Dairies during the years 1868 *and* 1869, *prepared by* Mr. J. DISSENT, *Conservancy Inspector.*

CALCUTTA.
Mr. J. Dissent.

1868.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
No. 3, MITTER'S LANE.								Rs.
Milkmen.								
Jadoo Hand	16	16	16	3	13	12	Ooloobariah ...	170
Ramcoomar Ghose	16	16	14	2	12	11	Do. ...	100
Ramdeb Ghose	40	40	36	5	31	30	Do. ...	300
Ramdhun Paul	52	52	40	7	33	31	Do. ...	316
Nobin Ghose	23	23	22	3	19	20	Do. ...	200
Gopaul Ghose	14	14	11	5	6	5	Chitpore ...	50
Boycunto Ghose	18	18	18	2	16	16	Do. ...	160
Banee Madub Ghose	18	18	18	1	17	17	Do. ...	153
Nobin Dang	13	13	13	3	10	7	Ooloobariah ...	71
Chunder Churn Dholay	20	20	20	1	19	12	Do. ...	116
Madhub Dholay	20	20	20	6	14	14	Do. ...	135
Tarachand Ghose	24	24	24	3	21	7	Do. ...	59
Shama Churn Ghose	13	13	13	2	11	9	Do. ...	82
BARANOSEE GHOSE'S STREET, BYE-LANE.								
Milkmen.								
Mullyram Bacooly	32	32	30	20	10	10	Chitpore ...	200
Jhoroo Gair	18	18	6	2	4	4	Do. ...	50
Nobin Ghose	9	9	3	1	2	2	Do. ...	20
Doorga Churn Ghose	10	10	9	6	3	3	Do. ...	30
Jodoo Nauth Ghose	4	4	1	...	1	...	...	10
Fuckeer Chand Ghose	10	10	3	1	2	2	Manicktollah...	20
Gobordhun Ghose	25	24	24	4	16	12	Do. ...	170
Beedoo Bewah	13	11	10	4	6	9	Do. ...	70
Taruck Doloee	60	50	30	10	20	25	Ooloobariah ...	200
Godadhur Kolay	40	40	30	20	10	...	...	120
Russick Matty	60	40	30	15	15	25	Ooloobariah ...	200
Dookeeram Torolee	16	16	8	4	4	5	Do. ...	40
Hara Chand Bacooly	18	10	10	5	5	4	Do. ...	60
Kisto Ghose	30	30	20	10	10	10	Do. ...	100
Modoosoodun Ghose	30	28	27	10	17	15	Do. ...	160
Gungaram Ghose	80	76	60	40	20	20	Do. ...	259
SREENAUTH ROY'S LANE.								
Milkman.								
Gungaram Ghose	60	54	40	20	20	30	Ooloobariah ...	200
MOOKTORAM BABOO'S STREET.								
Milkmen.								
Tacoordoss Ghose	20	15	10	5	5	13	Ooloobariah ...	50
Puddo Money Bewah...	16	16	16	10	6	7	Do. ...	70
Baharee Ghose	15	15	15	10	5	10	Do. ...	55
BOLORAM DEY'S STREET.								
Milkmen.								
Nolith Bewah	50	40	30	15	15	10	Dum-Dum ...	200
Gopaul Paul	12	12	12	6	6	4	Do. ...	160
Nuffer Bhabbe	14	14	14	9	5	5	Do. ...	125
Bolie Bacooly	14	13	10	3	7	4	Do. ...	140
AMHERST STREET.								
Oilmen.								
Sustee Ram Shadkhan	13	13	10	2	8	4	Chitpore ...	170
Roopchand Maul...	16	16	14	4	10	10	Do. ...	190
Goah Ram Mundul	8	8	7	3	4	4	Do. ...	50
Sree Ram Pahtro...	8	8	7	3	4	4	Sulkeeah ...	60
Soyrub Bewah	5	5	4	1	3	3	Ooloobariah ...	40
Goah Ram Pahtro	9	9	9	4	5	3	Do. ...	90

CALCUTTA.
Mr. J. Dissent.

Return showing the sickness and mortality in some of the Calcutta Dairies, &c.,—continued.

1868.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
CIRCULAR ROAD.								
Oilmen.								Rs.
Ramchunder Shadkhan	10	10	8	2	6	2	Ooloobariah ...	170
Gosie Shadkhan	6	6	6	4	2	1	Do. ...	40
Meetun Joy Gorie	8	8	4	2	2	1	Do. ...	40
Modoosoodun Gorie	10	10	10	...	10	8	Do. ...	200
Khetor Shadkhan	10	10	8	2	6	2	Do. ...	100
Godadhur Manah	8	8	7	2	5	3	Do. ...	110
Modoo Gorie, 2nd	18	18	17	5	12	11	Do. ...	200
Ramchunder Manah	18	18	5	1	4	4	Do. ...	80
RAMTONOO BOSE'S LANE.								
Milkmen.								
Orjoon Bacooly	32	32	32	16	16	...	...	300
Seta Nauth Ghose	20	20	20	11	9	...	...	160
Nobie Ghose	10	10	10	7	3	...	...	30
Jadub Ghose	40	40	40	24	16	...	...	256
Mully Bacooly	18	18	18	10	8	...	...	128
Choto Mully	16	16	16	6	10	...	...	150
Loll Chand Ghose	24	24	24	13	11	...	...	250
Jogornauth Ghose	14	14	14	8	6	...	...	150
Jetoo Bacooly	36	36	36	6	30	...	...	410
Dooke Bewah	16	16	16	6	10	...	...	160
Jodoo Nauth Ghose	30	30	30	8	22	8	Dum-Dum ...	400
Soroop Ghose	18	18	18	9	9	9	Do. ...	120
MANICKTOLLAH STREET.								
Milkmen.								
Lallchund Ghose	14	14	14	3	11	11	Dum-Dum ...	170
Soroop Ghose	10	10	10	6	4	...	...	80
Gopaul Marick	12	12	12	10	2	2	Dum-Dum ...	32
Gogun Gorie	6	6	6	1	5	2	Do. ...	80
Modoo Hand	40	40	40	30	10	...	...	200
Soorjee Bewah	3	3	3	1	2	...	...	32
Goru Chund Dholay	24	24	24	14	10	10	Dum-Dum ...	160
Raybutty Bewah	5	5	5	2	3	...	...	32
RAM BAGAN LANE.								
Milkman.								
Nuffer Ghose	4	4	4	...	4	...	...	64
RAJA GOOROO DOSS'S LANE.								
Milkman.								
Damoo Ghose	7	7	7	2	5	...	...	80
BALANOSEE GHOSE'S STREET.								
Oilmen.								
Boycunto Barick	9	9	9	6	3	...	...	60
Dence Bewah	5	5	5	3	2	2	Ooloobariah ...	22
Gooroo Churn Nayeck	2	2	2	...	2	2	Do. ...	20
Khetter Poramanick	6	6	6	2	4	...	...	60
Sagur Barick	10	10	10	4	60	...	...	100
BOLORAM DEY'S STREET.								
Milkmen.								
Aughur Bewah	10	10	10	1	9	...	...	100
Issur Paul	8	8	8	2	6	...	...	100
Hara Chand Ghose	7	7	7	5	2	...	...	32
Kally Ghose	6	6	6	2	4	...	...	60
Dookee Ghose	5	5	5	3	2	...	...	30
Jogo Bewah	10	10	10	3	7	9	Ooloobariah ...	150

Return showing the sickness and mortality in some of the Calcutta Dairies, &c.,—continued. CALCUTTA. Mr. J. Dissent.

1868.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
MANICKTOLLAH STREET.								Rs.
Oilmen.								
Bhogobutty Bewah	6	6	6	4	2	2	Ooloobariah ...	50
Kooroorum Mall	12	12	12	6	6	6	Do. ...	150
Gour Barick	6	6	4	...	4	3	Manicktollah .	60
Bemomohee Bewah	10	10	4	2	2	2	Do. ...	40
Goopeenauth Poramanick	5	5	5	1	4	4	Do. ...	100
Issur Sadkhan	6	6	6	1	5	5	Do. ...	150
Jadub Poramanick	12	12	12	2	10	8	Ooloobariah ...	250
Khetormoney Bewah	6	6	2	...	2	2	Do. ...	40
Baneemadhub Gorie	6	6	6	3	3	3	Do. ...	80
Chundermoney Bewah	3	3	3	2	1	1	Do. ...	25
Bolie Mundul	6	6	6	...	6	6	Do. ...	150
CORNWALLIS STREET.								
Oilmen.								
Modoosoodun Maul	8	8	4	...	4	4	Ooloobariah ...	80
Sreenauth Sadkhan	3	3	3	...	3	3	Do. ...	40
Ramchand Gorie	12	12	2	...	2	2	Do. ...	40
Doyahmoney Bewah	6	6	6	2	4	4	Do. ...	80
Jadub Gorie	10	10	6	3	3	3	Dum-Dum ...	60
Rudamoney Bewah	9	9	6	3	3	3	Do. ...	40
Golamee Gorie	15	15	10	7	3	3	Ooloobariah ...	60
Beeroo Gorie	5	5	2	...	2	2	Do. ...	40
Anuntoram Koloo	5	5	5	4	1	1	Manicktollah .	20
Sreemunto Gorie	8	8	4	3	1	1	Do. ...	20
Khetormoney Bewah	10	10	10	4	6	6	Sulkeeah ...	200
Rajcoomaree Bewah	8	8	5	...	5	5	Manicktollah .	150
MACHOOA BAZAAR.								
Oilmen.								
Bissonauth Sadkhan	6	6	6	3	3	3	Chitlah ...	60
Sreemutty Bewah	6	6	6	...	6	6	Ooloobariah ...	125
Issur Sadkhan	6	6	6	3	3	3	Chitlah ...	50
MODUN MITTER'S LANE.								
Oilmen.								
Gopaul Dey	18	18	12	6	6	6	Ooloobariah ...	80
Bemul Bewah	6	6	6	2	4	4	Manicktollah .	60
Sreemunto Dey	12	12	12	6	6	6	Ooloobariah ...	40
JORA BAGAN STREET.								
Milkmen.								
Modoo Ghose	16	16	10	6	4	4	Ooloobariah ...	50
Issur Paul	15	15	10	5	5	3	Do. ...	50
Preonath Ghose	24	24	20	10	10	10	Do. ...	100
Haradhun Ghose	15	15	10	4	6	4	Do. ...	50
Luckhe Money Bewah	20	19	19	16	3	...	...	34
Fuckeer Chand Ghose	15	15	15	10	5	...	...	60
Bhogobutty Bewah	8	8	8	2	6	..	...	60
Choonee Lall Ghose	16	16	16	5	11	...	...	110
Soroop Bacooly	10	16	9	4	5	...	...	60
PROSONO COOMAR TAGORE'S STREET.								
Milkman.								
Soobnee Bewah	20	20	20	4	16	...	...	160
Oilman.								
Baharee Gorie	8	8	8	3	5	...	...	100

CALCUTTA.
Mr. J. Dissent.

Return showing the sickness and mortality in some of the Calcutta Dairies, &c.,—continued.

1868.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
SOOKEA STREET.								Rs.
Milkmen.								
Modoosoodun Ghose	20	20	2	2	...	...	...	...
Ramcoor Ghose	6	6	6	2	4	2	Dum-Dum ...	60
Goness Sham Ghose	10	10	6	1	5	5	Ooloobariah ...	80
Poran Ghose	10	10	10	5	5	...	...	70
Sunnashe Ghose	30	30	30	20	10	10	Ooloobariah ...	160
PAHTOORIAH GHAT STREET.								
Milkmen.								
Nobin Ghose	16	16	16	4	12	12	Ooloobariah ...	200
Gorachand Ghose	9	9	9	6	3	3	Do. ...	80
DURPONARIAN TAGORE'S STREET.								
Milkmen.								
Jadub Ghose	22	22	22	15	5	5	Ooloobariah ...	80
Ramchand Ghose	22	20	10	5	5	5	Do. ...	70
Huris Ghose	9	9	6	3	3	3	Dum-Dum ...	45
Horo Money Dossee	10	9	9	4	5	5	Do. ...	100

1869.

NO. 3, MITTER'S LANE.								Rs.
Milkmen.								
Jadoo Haud	20	20	20	4	16	20	Ooloobariah ...	300
Ramcoomar Ghose	20	20	20	6	14	16	Do. ...	310
Ramdeb Ghose	50	50	46	16	30	44	Do. ...	500
Ramdhun Paul	60	60	48	16	32	50	Do.	600
Nobin Ghose	24	24	24	14	10	14	Do. ...	250
Gopaul Ghose	14	14	14	6	8	6	Do. ...	130
Boycunto Ghose	20	20	20	9	11	10	Do. ...	230
Banee Madub Ghose	20	20	20	3	17	3	Do. ...	300
Nobin Dang	13	13	13	3	10	9	Do. ...	100
Chundee Churn Dholay	20	20	20	3	17	17	Do. ...	250
Madub Dholay	20	20	20	4	16	16	Do. ...	225
Tarachand Ghose	25	25	25	4	21	3	Do. ...	600
Shama Churn Ghose	13	13	13	2	11	4	Do. ...	190
BARANOSEE GHOSE'S STREET, BYE-LANE.								
Milkmen.								
Muttyram Bacooly	32	32	32	11	21	15	Ooloobariah ...	400
Jhoroo Gair	18	18	18	5	13	13	Do. ...	208
Nobin Ghose	10	10	8	2	6	8	Do. ...	128
Doorga Churn Ghose	11	11	11	3	8	6	Do. ...	128
Jodoonauth Ghose	4	4	3	1	1	1	Do. ...	16
Fuckeer Chand Ghose	14	14	14	5	9	5	Do. ...	144
Goburdhun Ghose	16	16	16	3	13	9	Do. ...	190
Beedoo Bewah	13	13	13	5	8	7	Do. ...	128
Taruck Dolooe	40	40	40	12	28	20	Do. ...	500
Godadhur Colay	20	20	20	10	10	10	Do. ...	160
Russick Mally	40	40	40	15	21	18	Do. ...	409
Dookeeram Toroloe	9	9	9	5	4	4	Do. ...	64
Harachand Bacooly	8	8	8	4	4	2	Do. ...	65
Kistoghose	20	20	20	5	15	14	Do. ...	250
Modoosoodun Ghose	20	20	20	5	15	...	...	200
Gungaram Marick	40	40	40	4	36	20	Ooloobariah ...	700
Chintamoney Bewah	10	10	10	5	5	5	Do. ...	80
SREENAUTH ROY'S LANE.								
Milkman.								
Gungaram Ghose	70	70	60	20	40	40	Ooloobariah ...	640

Return showing the sickness and mortality in some of the Calcutta Dairies, &c.,—continued.

1869.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
MOOKTORAM BABOO'S STREET.								Rs.
Milkmen.								
Thakoordass Ghose	18	18	18	9	9	9	Ooloobariah ...	144
Gobordhun Gair	16	16	16	8	8	8	Dum-Dum ...	160
Bamah Bewah	9	9	9	4	5	...	Do. ...	80
Puddo Money Bewah	10	10	10	5	5	5	Do. ...	80
Baharee Ghose	10	10	10	5	5	5	Do. ...	90
JORA BAGAN STREET.								
Milkmen.								
Modoo Ghose	15	15	10	4	6	6	Ooloobariah ...	72
Issur Paul	8	8	7	1	6	6	Do. ...	72
Bhogobutty Bewah	2	2	2	1	1	1	Do. ...	12
Soroop Bacooly	6	6	3	1	2	2	Do. ...	24
Preo Nauth Ghose	23	23	7	3	4	4	Do. ...	50
Choonee Lall Ghose	15	15	3	2	1	2	Do. ...	12
Luckhi Money Bewah	13	13	4	2	2	2	Do. ...	24
Koylashi Bewah	5	5	1	...	1	...	Do. ...	12
Haradhun Ghose	11	11	5	2	3	3	Do. ...	36
Fuckeerchand Ghose	5	5	2	...	2	...	Do. ...	24
Raybutty Bewah	3	3	2	...	1	1	Do. ...	12
Choto Luckhe Money	3	3	1	...	1	1	Do. ...	12
PROSONO COOMAR TAGORE'S STREET.								
Milkman.								
Soobnee Bewah	10	10	3	1	2	2	Ooloobariah ...	24
Oilman.								
Baharee Shadkhan	5	5	5	3	2	...	...	40
SOOKEA STREET.								
Milkman.								
Modoosoodun Ghose	20	20	20	10	10	...	...	100
Oilman.								
Fuckeerchand Gorie	6	6	2	...	2	2	Chitlah ...	60
PAHTOORIAH GHATAH.								
Milkman.								
Nobin Ghose	30	30	30	15	15	...	...	150
DURPONARIAN TAGORE'S STREET.								
Milkmen.								
Jadub Ghose	25	25	22	5	17	...	...	170
Ramchand Ghose	20	20	17	2	15	2	Ooloobariah ...	150
Horomoney Bewah	19	19	18	12	6	6	Do. ...	60
MANICKTOLLAH STREET.								
Oilmen.								
Koororam Mall	13	13	10	5	5	2	Ooloobariah ...	150
Issur Sadkhan	6	6	6	2	4	2	Do. ...	80
Gour Barick	6	6	5	...	5	5	Dum-Dum ...	160
Jadub Poramanick	12	12	12	2	10	10	Do. ...	200
Bolie Mundole	8	8	8	2	6	6	Chitpore ...	160
Baneemadhub Gorie	10	10	10	2	8	4	Do. ...	180

CALCUTTA.
Mr. J. Dissent.

Return showing the sickness and mortality in some of the Calcutta Dairies, &c.,—continued.

1869.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
CORNWALLIS STREET.								
Oilmen.								
Modoosoodun Maul	8	8	8	4	4	4	Sulkeah ...	110
Ramchand Gorie	20	20	18	8	10	...	Do. ...	200
Doyahmonee Bewah	6	6	6	...	6	4	Do. ...	110
Radhamoney Bewah	9	9	9	4	5	4	Do. ...	100
Golamee Gorie	15	15	10	3	7	4	Do. ...	130
Beeroo Gorie	5	5	5	1	4	3	Do. ...	100
Khetermoney Bewah	14	10	...	10	4	...	Do. ...	50
MACHOOA BAZAAR STREET.								
Oilmen.								
Sreemutty Bewah	6	6	6	...	6	4	Sulkeah ...	140
Bissonauth Sadkhan	4	4	4	...	4	4	Do. ...	100
Issur Sadkhan	6	6	6	...	6	4	Do. ...	140
MODUN MITTER'S LANE.								
Oilmen.								
Gopaul Dey	16	16	15	4	11	4	Manicktollah	100
Bemul Bewah	10	10	10	2	8	3	Do. ...	90
Sreemunto Dey	14	14	14	5	9	7	Do. ...	250
MANICKTOLLAH STREET.								
Milkmen.								
Lallchand Ghose	20	20	20	10	10	10	Sulkeah ...	170
Soroop Ghose	16	16	16	10	6	6	Do. ...	130
Gopaul Marick	30	30	25	5	20	16	Do. ...	250
Gogun Gorie	25	25	16	8	8	4	Do. ...	128
Modoo Hand	60	40	40	10	30	10	Do. ...	290
Gorachand Dholay	20	20	20	20	10	10	Do. ...	140
BARANOSSEE GHOSE'S STREET.								
Oilmen.								
Boycunto Ghose	10	10	10	2	8	4	Ooloobariah ...	100
Denoo Bewah	10	10	9	4	5	5	Do. ...	90
Gooroochurn Najuk	8	8	8	4	4	4	Do. ...	70
Khetor Poramanick	8	8	4	...	4	4	Do. ...	80
Sagore Barick	7	7	3	...	3	3	Do. ...	60
BOLORAM DEY'S STREET.								
Milkmen.								
Aughur Bewah	15	10	10	5	5	5	Do. ...	125
Issur Paul	10	10	10	2	8	...	Do. ...	160
Haruchand Ghose	9	9	9	...	9	9	Manicktollah...	140
Kally Ghose	7	7	7	5	2	2	Do. ...	30
Dookee Ghose	5	5	5	...	5	5	Do. ...	100
Jogo Bewah	10	10	10	...	10	9	Do. ...	200
Nolith Bewah	50	50	50	20	30	...	.....	200
Gopaul Paul	12	12	12	5	7	5	Ooloobariah ...	112
Nuffer Bhabhe	10	10	10	5	5	15	Do. ...	50
Bolie Bacooly	14	14	14	7	7	...	.....	150

Return showing the sickness and mortality in some of the Calcutta Dairies, &c.,—concluded.

CALCUTTA.
Mr. J. Dissent.

1869.

NAME, RESIDENCE, AND OCCUPATION.	No. of animals kept.	No. prior to the outbreak of disease.	No. attacked.	No. recovered.	No. died.	No. of cattle bought during the year.	Whence bought.	Estimated loss in Rupees.
RAMTONOO BOSE'S LANE.								
Milkmen.								
Orjoon Bacooly	40	40	35	17	18	10	Ooloobariah ...	180
Setaram Marick	25	25	20	10	10	10	Do. ...	120
Nobin Ghose	16	15	14	10	4	4	Do. ...	50
Jadub Ghose	45	43	43	10	33	30	Sulkeah ...	290
Mutty Bacooly	18	18	14	10	4	4	Do. ...	50
Choto Mutty	15	15	15	5	10	...	...	100
Lall Chand Ghose	22	21	20	10	10	...	...	140
Jogor Nauth Ghose	37	37	35	5	30	19	Chitlah ..	350
Jeetoo Bacooly	36	36	34	4	30	20	Do. ..	360
Dookee Bewah	15	15	14	7	7	6	Do. ...	120
Jodoo Nauth Ghose	30	30	20	10	10	10	Do. ...	80
Soroop Ghose	20	20	20	10	10	10	Do. ...	70
AMHERST STREET.								
Oilmen.								
Susteeram Shadkhan	13	13	4	2	2	...	...	40
Roop Chand Maul	2	2	2	...	2	2	Chitpore ...	40
Goah Ram Mundul	6	6	6	1	5	5	Do. ...	125
Sreeram Pahtro	6	6	6	...	6	6	Do. ...	200
Soyrub Bewah	5	5	5	4	1	1	Do. ...	50
Peary Bewah	5	5	5	..	5	5	Do. ...	100
Goahram Pahtro	6	6	6	...	6	6	Do. ...	125
CIRCULAR ROAD.								
Oilmen.								
Ram Chunder Shadkhan	10	10	10	8	2	1	Chitpore ...	40
Gosie Shadkhan	6	6	6	4	2	1	Do. ...	40
Meetunjoy Gorie	6	6	6	...	6	2	Do. ...	100
Modoosoodun Gorie	3	3	3	3	3	3	Do. ...	60
Kheter Shadkhan	3	3	3	...	3	3	Do. ...	60
Godadhur Manah	12	12	12	10	2	2	Do. ...	40
Moodoo Gorie 2nd	12	12	11	7	4	...	...	80
Degumber Gosie	18	18	17	11	6	...	...	100
Ramchunder Manah	18	18	17	3	14	14	Chitpore ...	200

SUMMARY.

TOTAL OF 1868 ...	2,139	2,068	1,764	735	1,067	713	...	14,642
TOTAL OF 1869 ...	2,016	1,984	1,783	643	1,164	848	...	23,140
GRAND TOTAL ...	4,155	4,052	3,547	1,378	2,231	1,561	...	37,782

REMARKS.

The general result of this statement is as follows:—

Attacked per cent. of stock, 87·5.
Died per cent. of stock, 55·05.
Died per cent. of attacked, 62·8.

This is the result of an unchecked rinderpest among cattle crowded together in ill-ventilated sheds and surrounded by insanitary influences of all sorts. The inquiries of the Commission (pages 70—75) confirm the general accuracy of the statement, and there is no reason to consider it overdrawn or exaggerated. The estimated money loss comes to about Rs. 17 a head, which does not appear to be an excessive estimate, seeing that these men sometimes get Rs. 40 and 50 for a fat milch cow.

DIAMOND HARBOUR.
Baboo H. C. Kerr.

No. 2.

Statistics of Bosonto *in the Diamond Harbour Sub-division, 24-Pergunnahs District.*

VILLAGES.	Period of outbreak.	Village stock.	No. attacked.	No. died.	No. recovered.	REMARKS.
Mohunpoor	1864	200	45	30	15	These figures were collected by Baboo Hem Chunder Kerr in course of a village-to-village investigation. They may therefore be accepted as a fair representation of the effects of rinderpest left to itself in a district. The type of the disease of this outbreak was severe. The results are as follows:— Attacked per cent. of stock, 43·09 Died per cent. of stock ....31·6 Died per cent. of attacked... 75·2 The last ratio approximates closely to that given by Mr. Farrell at page 59 as the result of recorded cases, namely 73·1.
Narainpoor	„	80	3	3	...	
Emythpoor	„	100	30	25	5	
Dorakistonugger, 2nd ...	1867-68	60	27	15	12	
TOTAL ...	...	440	105	73	32	
Bonerhaut	1868	14	7	2	5	
Narbari	„	200	5	3	2	
Calenugger	„	125	65	40	25	
Doorganugger ...	„	100	45	30	15	
Gobindpore ...	„	125	45	30	15	
Bodortola ...	„	90	50	20	30	
Bonomallypoor ...	„	70	22	15	7	
Rutnessorpoor ...	„	100	58	15	8	
Japberiar ...	„	100	24	14	10	
Hansdopora ...	„	60	39	25	14	
Cawnpoor ...	„	300	130	100	30	
Hutoogunge ...	„	50	14	12	2	
Broshogatcha ...	„	60	16	16	...	
Atmoshid ...	„	90	60	50	10	
Berondoree ...	„	125	75	50	25	
Ramessurpoor ...	„	100	17	15	2	
Jooaroo ...	„	80	9	3	6	
Shorberia ...	„	80	40	30	10	
Ghutuckpoor ..	„	200	100	80	20	
Joganeah ..	„	50	36	25	11	
Romanathpoor ...	„	32	11	8	3	
Dhora ...	„	200	100	80	20	
Howra ...	„	250	112	90	22	
Borberia ...	„	300	250	200	50	
Modusoodonpore ...	„	100	41	26	15	
Sontoshpoor ...	„	100	55	40	15	
Ramzanapoor ...	„	35	29	25	4	
Chuckporomessory ...	„	100	60	30	30	
Gopalnugger ...	„	100	40	25	15	
Taruf Derar's Chuck ...	„	80	50	30	20	
Chuck Rajaram ...	„	40	27	20	7	
Dowlatabad ...	„	90	30	26	4	
Buxeergram ...	„	100	25	22	3	
Mirzapur ...	„	150	70	50	20	
Gazipur ...	„	150	27	15	12	
Culpee ...	„	500	200	175	25	
TOTAL ...	...	3,486	1,984	1,472	512	
Umbalhara ...	1868-69	100	17	17	...	
Kamarpole ...	„	400	190	175	15	
Dabeepoor ...	„	17	6	4	2	
Dhunberia ...	„	100	60	40	20	
Bardrove ...	„	150	20	8	12	
Haoree ...	„	600	187	175	12	
Ramsoonderpoor ..	„	80	29	14	15	
Dabeepoor ...	„	175	125	95	30	
Sreenugger ...	„	100	80	75	5	
Sultanpoor ...	„	600	158	150	8	
Coronjole ...	„	400	250	200	50	
Anundnuggur ...	„	300	295	225	70	
Bejoy Joyrampoor ...	„	200	155	125	30	
Chockdoolalpore ...	„	125	90	70	20	
TOTAL ...	...	3,317	1,662	1,373	289	

Statistics of Bosonto *in the Diamond Harbour Sub-division, &c.*,—continued.

VILLAGES.	Period of out-break.	Village stock.	No. attacked.	No. died.	No. recovered.	REMARKS.
Sheorisha ...	1868-70	600	200	125	75	
Kolagacha ...	„	200	87	72	15	
Coberai ..	„	80	78	66	12	
Darai ...	„	250	74	56	18	
TOTAL ...	...	1,130	439	319	120	
Ramchunderpoor ...	1869	100	70	20	50	
Morieberia ...	„	60	10	10	4	
Hanokhole ...	„	16	6	6	...	
Atkistorampoor ...	„	60	20	12	8	
Bursagorah ...	„	100	26	20	6	
Borgram ...	„	45	6	6	...	
Dipey ...	„	50	9	6	3	
Agnepur ...	„	40	25	10	15	
Ashedabra ...	„	60	40	15	28	
Ramnugger ...	„	150	125	100	25	
Doorganugger ...	„	300	125	100	25	
Bhogobanpoor ...	„	250	225	175	50	
Caleberia ...	„	55	25	15	10	
Peerpoor ...	„	70	14	10	4	
Cantiberia ...	„	500	200	150	50	
Woodoyrampoor ..	„	150	4	4	...	
Essoripoor ...	„	200	24	14	10	
Boolurchuck ...	„	150	24	16	8	
TOTAL ...	...	2,356	978	685	293	
Tarabad ..	1869-70	33	27	20	7	
Kriparampoor ..	„	100	20	20	...	
TOTAL ...	...	133	47	40	7	
Kaniegachee ..	1870	90	13	7	6	
Ramrampoor ...	„	300	20	17	3	
Paroolia ...	„	350	13	4	9	
Dorekistonugger ...	„	300	3	2	1	
Hazipur ...	„	150	28	16	12	
Abdalpoor ...	„	300	160	100	60	
Ghosischuck ..	„	25	9	3	6	
Chavidugar ...	„	80	21	16	5	
Ramgovindpoor ...	„	60	13	4	9	
Pathra ...	„	250	26	20	6	
Bahadoorpoor ...	„	25	16	6	10	
Hurindanga ...	„	100	14	10	4	
Banitola ...	„	100	12	9	3	
Mungrazpoor ...	„	60	22	10	12	
Parbutipoor ...	„	150	40	10	30	
Meethacoond ...	„	300	150	50	100	
TOTAL ...	...	2,540	560	284	276	
GRAND TOTAL ...	...	13,402	5,775	4,246	1,529	

DIAMOND HARBOUR.
Baboo H. C. Kerr.

No. 3.

Summary of Returns from Diamond Harbour Sub-division, 24-Pergunnahs.—Disease Bosonto.

District, Pergunnah, Thannah, Village.	Date of outbreak.	No. of cattle in the village.	No. attacked.	No. died.	No. recovered.	Date of return.	REMARKS.
STATION DIAMOND HARBOUR.							
Naraintollah ...	April 7, 1870	Not stated.	4	2	2	11th April 1870	The figures of this statement came from the Magistrate's office; they represent the effect of a mild and sporadic rinderpest in a year of limited prevalence. The death-rate is 45·5. The return of stock is incomplete.
Jhandain ...	Do. 14 „	Do.	10	5	5	Ditto.	
Parbuttepore ...	Do. 14 „	Do.	2	1	1	Ditto.	
Nowbhasaul ...	Do. 7 „	Do.	8	4	4	...	
Monypore ...	Do. 7 „	Do.	5	3	2	...	
Kharwalia ...	Do. 21 „	Do.	3	2	1	...	
Bhankole ...	May 12 „	150	9	8	1	28th May 1870.	
Singhbaira ...	Do. 11 „	125	10	6	4	Ditto.	
Narna ...	Do. 19 „	144	6	4	2	4th June 1870.	
STATION SULTANPORE.	TOTAL ...	..	57	35	22	...	
Kirparanpore ...	Feb. 3, 1870	300	4	3	1	16th Apl. 1870.	
Ulloodaira ...	April 7 „	300	10	5	5	Ditto.	
Kalikapore ...	Do. 13 „	300	1	1	...	Ditto.	
Ailparah ...	Do. 13 „	300	3	...	3	Ditto.	
Baidipore ...	Do. 2 „	400	3	2	1	Ditto.	
Doorgapore ..	Do. 3 „	125	3	2	1	Ditto.	
Ghatessura ...	Mar. 28 „	300	103	28	75	7th May 1870.	
Chundeepore ...	April 21 „	Not stated.	3	1	2	Ditto.	
Bolberia ...	Do. 28 „	Do.	5	2	3	Ditto.	
Kelarampore ...	May 2 „	70	5	...	5	Ditto.	
Bhagykhagy ...	Do. 1 „	150	2	1	1	14th May 1870.	
Taleeheira ...	Do. 12 „	Not stated.	1	..	1	Ditto.	
STATION DEBIPORE.	TOTAL ...	...	143	45	98	...	
Bomnuggur ...	Mar. 31, 1870	146	21	16	5	23rd Apl. 1870.	
Bamabahaberia ...	Do. 31 „	130	26	13	13	...	
Bhugobanpoor ..	Do. 31 „	68	5	4	1	...	
Thoorkhati ...	Do. 31 „	Not stated.	4	4	...	...	
Khautakati ...	Do. 21 „	Do.	1	...	1	...	
TOTAL ...	..	...	57	37	28	...	
GRAND TOTAL...	...	...	257	117	140	...	

SATKEERA AND BARASET.

No. 4.

Summary of Returns from Satkeerah and Baraset Sub-divisions, 24-Pergunnahs.—Disease Bosonto.

District, Pergunnah, Thannah.	Date of outbreak.	No of cattle in the village.	No. attacked.	No. died.	No. recovered.	No. still ill.	Date of return.	REMARKS.
SATKEERAH SUBDIVISION.	1870.						1870.	
Kamarpore ...	February 1 ...	300	150	105	45	...	May 30.	The result of the statements summarised in the table is as follows:— Attacked per cent. of stock ... 23·8 Died per cent. of stock ... 17·06 Died per cent. of attacked ... 71·40 The figures were forwarded from time to time from the Magistrate's office. They represent a sharp attack of rinderpest in a few villages where no precautions were adopted to limit the disease. The table may be taken as an index of the damage which rinderpest *may* cause in a few villages of a district.
Boychona ...	April 28 ...	200	33	11	22	...	Do.	
Khajoordanghi ...	June 1 ...	264	64	51	4	9	June 27.	
Koalia ...	January 9 ...	250	50	41	9	...	Do.	
TOTAL ...	.....	1,014	297	208	80	9		
BARASET SUBDIVISION.								
Bhebagachi ...	March 7 ..	170	96	73	23	...	July 28.	
Dogachhi ...	April 20 ...	474	3	2	1	...	June 21.	
TOTAL	.....	644	99	75	24	...		
GRAND TOTAL ...	.....	1,658	396	283	104	9		

No. 5.

Statement of the Sickness and Mortality among cattle caused by Bosonto *in the Chooadungah Sub-division of the Nuddea District.*

Police Station.	Village.	Date of outbreak.	Date of return.	Village stock.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks.
Kaloopole ...	Bellacandee ...	Jan. 22 or 23, 1870.	Feb. 8, 1870 ...	250	20	10	6	4	These figures were furnished by the Police. Their result is as follows :—
Alumdangah ...	Pooteemaree ...	Jan. 21, 1870 ...	.....	300	40	22	8	10	
	Nadpore ...	Feb. 2 „ ...	.....	200	10	5	5	...	
	Benodpore ...	„ 1 „ ...	.....	210	25	10	10	5	
	Cadernugger ...	„ 9 „ ...	.....	218	67	43	10	14	
	Belgachee ...	„ 12 „ ...	.....	1,203	415	265	140	10	
	Khascuttra ...	Jan. 17 „ ...	.....	457	13	5	8	...	
	Buxipore ...	Feb. 1 „ ...	.....	600	11	8	3	...	
	Gorgoree Gobindpore ...	„ 11 „ ...	.....	199	173	7	147	19	
	Chinamaree ...	„ 9 „ ...	.....	250	22	3	9	10	
	Sonatun ...	„ 12 „ ...	.....	150	24	10	10	4	
	Total ...	.....	.....	3,787	804	378	350	76	
Chooadangah ...	Hogoledanga ...	Jan. 13 and 14, 1870	Feb. 18, 1870 ...	67	27	3	12	12	
	Dangore, Ottah, Morzah...	Jan. 10, 11, 12, 1870	.....	226	12	3	5	4	
	Total ...	.....	.....	293	39	6	17	16	
Damoorhooda ...	Ebrampore ...	Early in Dec. ...	Feb. 19, 1870 ...	275	10	5	5	...	
	Kolabaree ...	Jan. 4, 1870 ...	.....	500	12	12	...	...	
	Bastoopore ...	„ 15 „ ...	.....	400	35	5	16	14	
	Bagadinga ...	„ 18 „ ...	.....	280	20	2	18	...	
	Kadeepore ...	Nov. 28 „ ...	.....	1,000	200	80	120	..	
	Doodpatila ...	Dec. „ ...	.....	500	50	10	40	...	
	Total ...	.....	.....	2,955	327	114	199	14	
Jeeboonnagore ...	Sreerampore ...	Jan. 10, 11, 1870 ...	.....	100	2	2	...	...	
	Koopakhalla ...	End of Dec. „ ...	.....	550	52	40	2	10	
	Ootholee ...	Jan. „ ...	.....	2,000	210	150	50	10	
	Nischindpoor ...	„ 23 „ ...	.....	325	20	7	4	9	
	Kooltolah ...	Feb. 5 „ ...	.....	300	25	10	5	10	
	Monohurpore ...	Jan. „ ...	.....	525	200	100	50	50	
	Mudhubpore ...	„ „ ...	.....	150	70	20	50	...	
	Marianpore ...	Feb. 12 „ ...	.....	424	2	1	...	1	
	Midnapore ...	„ 27 „ ...	.....	500	25	12	13	...	
	Total ...	.....	.....	4,874	606	342	174	90	
	Grand Total ...	.....	.....	12,159	1,796	850	746	200	

Attacked per cent. of stock ... 14·7
Died ditto ... 6·9
Ditto of attacked ... 47·3

They represent, as far as they go, an incomplete or unfinished outbreak; and as the statistics only of affected villages are given, they exaggerate the sickness and mortality among the stock of the district or sub-division at large. *Khoorah* prevailed simultaneously, but caused little or no loss. It has been excluded from this table.

No. 6.

Return of Casualties among Stock in the villages attached to the Indigo Factories of MR. JAMES HILLS, *Nischindpore, Nuddea, Presidency Division, from 1st September* 1869 *to 15th February* 1870.

	Locality.	Stock.	Attacked.	Died.	Recovered.	Still ill.	Remarks.
Villages of Nischindpore and Peerpore Factories.	Kapashdanga and Aramdanga	723	401	102	79	220	This table is the result of an inquiry conducted by the direction of Mr. Hills, at the suggestion of Mr. Cotton, Assistant Magistrate in charge of the Sub-division of Chooadangah. It may be accepted as a fair approximation of the amount of mortality which may occur in a populous area where murrain is rife. The general results are—
	Nischindpoor	170	105	45	40	20	
	Doorgapoor	112	67	4	22	41	
	Dhannodhora	188	100	15	12	73	
	Shoobulpoor	470	250	80	30	140	
	Bogadanga	380	200	30	20	150	
	Koorareegachee	24	12	[illegible]	.....	.....	
	Shadaboree	6	3	3	.....	.....	
	Joorunpoor	1,167	786	122	[illegible]05	259	
	Koomarpoor	85	75	8	[illegible]	2	
	Chandpoor	69	52	6	[illegible]	11	
	Moktearpoor	50	35	5	20	10	
	Chitteea	262	151	60	40	51	
	Daoolee	367	201	96	35	70	
	Hogoledanga	299	175	68	51	56	
	Bearbaree	132	80	15	28	37	
	Moonsheepore	165	100	39	35	26	
	Kootubpoor	108	70	32	32	6	
	Kollydanga	60	35	16	10	9	
	Jatteealtola	75	45	20	15	10	
	Koolia	40	25	11	10	4	
	Kollabaree	185	100	75	15	10	
	Hurrirampoor	140	75	16	10	5	
	Ramnugger	128	70	50	12	8	
	Gopalpoor	500	300	125	100	75	
	Peerpoor	26	13	13	.....	.....	
	Bistoopoo	545	500	29	455	16	
	Luckipoor	275	200	62	125	13	
	Gyaspoor	125	101	18	75	7	
	Dolurpoor	260	160	100	60	.....	
	Kistodebpoor	350	225	125	100	.....	
	Gopeenathpoor	120	110	10	100	.....	
	Chowkeeghatta	75	50	25	25	.....	

Attacked per cent. of stock ... ... 63·9
Died per cent. of stock ... ... 24·
Died per cent. of attacked ... ... 37·5

The assigned causes of death are—

Bororog	... 421	13·7	per cent. of total deaths.
Gootee	... 367	11·9	,,
Bussunto	... 842	27·4	,,
Puschima	... 1,005	32·7	,,
Dukhina	... 79	2·5	,,
Shetola	... 185	6·1	,,
TOTAL	.. 2,899	94·3	,,

These are names by which rinderpest is known, and the different names may indicate different varieties of disease.

The remaining deaths are attributed to *khoorah*, foot and mouth disease, and *pashanghee*, a disease whose nature cannot be determined. As compared with the preceding table, it shows a much greater amount of sickness and mortality, but it must be remembered that only affected villages are included.

Joraghatta	...	60	40	20	20	.....			
Khadirpoor	...	250	150	70	50	30			
Kashulpoor	...	35	25	8	15	2			
Sheealmaree	...	70	50	15	30	5			
Booteapara	...	105	65	30	25	10			
Kantopore	...	51	36	10	21	5			
Aloockdeea	...	200	125	75	50	.....			
Moneerampoor	...	170	100	57	30	13			
Dowlutdyar	...	20	10	.....	10	.....			
Acundobaria	...	14	7	.....	7	.....			
Peetamburpoor	...	10	5	.....	5	.....			
	TOTAL ...	8,566	5,484	1,766	2,324	1,394			
VILLAGES OF JEETARPOOR FACTORY.									
Boneearpoor	...	341	201	80	70	51			
Monapoor	...	118	75	35	32	8			
Peerosepoor	...	564	357	107	150	100			
Gopalpoor	...	325	225	100	125	.....			
Kallyabukree	...	328	189	112	50	27			
Bhobanundopoor	...	146	104	42	62	.....			
Ashruppoor	...	110	75	35	40	.....			
Jooarpoor	...	76	70	6	64	.....			
Toongee	...	44	40	4	36	.....			
Katalpotta	...	32	30	2	28	.....			
Byaminpara	...	250	150	100	50	.....			
Halshamnugger	...	30	20	10	10	.....			
Shamnugger	...	300	200	100	100	.....			
Choke	...	160	100	60	40	.....			
Mojemepoor	...	85	50	25	15	10			
Komorepoor	...	60	40	20	20	.....			
Naloodhu	...	35	20	15	5	.....			
Bhoyrubnugger	...	54	30	20	6	4			
Charoolleah	...	45	25	20	5	.....			
Dolallnugger	...	32	20	12	8	.....			
	TOTAL ...	3,135	2,021	905	916	200			

Return of Casualties among Stock in the villages attached to the Indigo Factories of Mr. J. Hills, &c.—continued.

	Locality.	Stock.	Attacked.	Died.	Recovered.	Still ill.	Remarks.
Villages of Kalacheentuggur Factory.	Koolpala	50	30	15	10	5	
	Nudinlaspoor	20	11	7	2	2	
	Valeypoor	17	10	7	3	.....	
	Chuthlah	7	5	2	3	.....	
	Hurrynathnugger	11	7	3	3	1	
	Anuatnugger	9	6	3	3	.....	
	Majhodh	14	7	7	.....	.....	
	Rungpoor	22	12	7	2	3	
	Gopalnugger	6	4	2	2	.....	
	Shingeetee	200	150	50	100	.....	
	Patdunneshpoor	140	100	40	60	.....	
	Dhaunokhalla	179	93	86	7	.....	
	Khorompoor	75	42	33	9	.....	
	Hapana	24	12	10	.....	2	
	Paneeghat	16	8	8	.....	.....	
	Hareeashaha	79	47	32	15	.....	
	Gopalnugger	80	50	30	20	.....	
	Sheemooltola	53	30	23	7	.....	
	Koryegachee	2	1	1	.....	.....	
	Kushba	40	25	15	10	.....	
	Bhulpara	20	15	5	10	.....	
	Koochoryekhalla	18	10	8	2	.....	
	Jooshanda	19	11	8	3	.....	
	Total	1,101	686	402	271	13	
	Grand Total	12,802	8,189	3,073	3,511	1,607	

No. 7.

Statement of Cattle Disease prevailing in the Pooree District during December 1869 *and January* 1870.

District.	Pergunnah.	Thannah.	Village.	Date of outbreak.	Date of return.	No. of cattle in locality.	No. attacked.	No. died.	No. recovered.	No. still ill.	Remarks as to symptoms, treatment, &c.
Pooree ...	Kodhar ...	.....	Taldah ...	Dec. 19, 1869	Jan. 26, 1870	225	41	10	23	8	The detail of symptoms is very meagre. Two distinct diseases, namely cow-pox or rinderpest and *phattya* or foot and mouth disease, seem to have prevailed simultaneously, and it is impossible to separate the two, or to show in what village one or the other, or both prevailed. The only treatment noted is that "poojahs were offered to the Debi."
			Edbas ...	„ 24 „		100	20	8	6	6	
			Dehecurenda ...	„ 22 „		150	40	10	20	10	
			Taikhulla ...			80	50	20	20	10	
	Murrichpoor ...	.....	Sonadhor ...	„ 14 „		310	160	80	45	35	The general result is as follows:—
	Killah Murrichpoor.	.....	Dasbattia ...	„ 10 „		150	100	70	20	10	Attacked per cent. of stock ... 51·4
			Kaliakore ...	„ 27 „		50	30	20	5	5	Died per cent. of stock ... 20·8
			Risilo ...			210	140	70	30	40	Died per cent. of attacked ... 40·4
	Damarkand ...	.....	Berimand ...	„ 28 „		50	21	12	7	2	This table gives results resembling those of No. 6 very closely.
	Autrodhe ...	.....	Amdihi ...	„ 29 „		37	17	9	4	4	
	Chatragor ...	.....	Barcool ...	„ 17 „		87	87	5	62	20	
	Dobanpoor ...	.....	Parreeband ...	„ 22 „		67	67	2	40	25	
		.....	Gub Pudder ...	„ 25 „		15	15	3	2	10	
					Total ...	1,531	788	319	284	185	

No. 8.

Statement of Mortality from Cattle Disease in Assam from 16*th August* 1869 *to* 15*th November* 1870, *compiled from the fortnightly reports submitted to Government by the Commissioner.*

Date of Report.	Kamroop.		Durrung.		Nowgong.		Seebsaugor.		Luckimpore.		Total Mortality.
	No. attacked.	No. died.	No. attacked.	No. died.	No. attacked.	No. died.	No. attacked.	No. died.	No. attacked.	No. died.	
Fortnight ending 16th Aug. 1869	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	325
Ditto 31st „ „	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	252
Ditto 15th Sept. „	.....	486	83	41	.....	253	.....	7,639	.....	510	8,929
Ditto 30th „ „	.....	416	131	111	.....	50	.....	2,731	.....	338	3,646
Ditto 15th Oct. „	260	180	528	498	.....	220	.....	1,088	.....	354	2,340
Ditto 31st „ „	75	59	324	279	.....	89	.....	968	.....	332	1,727
Ditto 15th Nov. „	66	58	249	207	224	139	.....	1,054	723	339	1,797
Ditto 30th „ „	422	356	138	100	140	106	.....	1,910	670	265	2,737
Ditto 15th Dec. „	723	378	71	48	99	71	.....	1,656	1,415	530	2,683
Ditto 31st „ „	98	74	34	31	487	340	.....	2,473	1,929	1,380	4,298
Ditto 15th Jan. 1870	221	135	.....	.....	301	222	.....	2,017	1,208	1,128	3,502
Ditto 31st „ „	643	331	.....	.....	304	169	.....	2,168	101	68	2,736
Ditto 15th Feb. „	400	300	.....	.....	367	290	.....	2,369	104	80	3,039
Ditto 28th „ „	500	350	.....	.....	126	91	.....	3,105	138	123	3,669
Ditto 15th March „	650	580	.....	.....	74	57	.....	1,974	252	188	2,799
Ditto 31st „ „	1,597	1,160	.....	.....	301	226	.....	2,849	128	107	4,342
Ditto 15th April „	1,015	740	.....	.....	329	180	.....	2,270	221	190	3,380
Ditto 30th „ „	430	260	.....	.....	50	50	.....	1,367	166	156	1,833

Ditto	*15th May* „	*519*	*310*	.....	.....	4	4	.....	1,155	384	329	1,828
Ditto	31st „ „	426	265	20	.....	674	484	.....	825	247	217	1,791
Ditto	15th June „	517	177	72	47	75	25	.....	297	29	29	575
Ditto	30th „ „	401	165	.....	60	13	13	.....	198	427	171	607
Ditto	15th July „	470	189	.....	56	161	86	.....	111	165	40	482
Ditto	31st „ „	498	94	7	4	13	10	.....	113	25	21	242
Ditto	15th Aug. „	.....	36	50	36	25	23	.....	77	3	.....	172
Ditto	31st „ „	.....	.....	.....	2	96	89	.....	14	10	5	110
Ditto	15th Sept. „	.....	.....	.....	.....	87	60	.....	13	32	32	105
Ditto	30th „ „	.....	.....	.....	.....	47	27	.....	.....	8	7	34
Ditto	15th Oct. „	.....	.....	53	37	13	5	.....	10	4	4	56
Ditto	31st „ „	.....	.....	.....	10	55	55	.....	.....	1	1	66
Ditto	15th Nov. „	.....	.....	.....	.....	32	10	.....	... ..	.....	.....	10
	Mortality of 1869	.....	2,007	.....	1,315	.....	1,268	.....	19,519	.....	4,048	28,734
	Mortality of 1870	.....	5,122	.....	252	.....	2,176	.....	20,932	.....	2,896	31,378
	TOTAL ...	.....	7,129	.....	1,567	.....	3,444	.....	40,451	.....	6,944	60,112

REMARKS.

The mortality shown in this table is considerably less than that shown by Veterinary Surgeon H. Farrell in his report dated 2nd April 1870. The two statements are contrasted in the margin. Mr. Farrell states that his figures are "entirely from official sources," and surmises that "half, or even one quarter, of the figures would be nearer the mark." Either statement is probably very far from accurate, but both show a very large mortality among horned stock during the years 1869 and 1870. The entries in the table, when both number attacked and died are given, have been summed up with the following result:—Attacked, 24,154; died, 15,872; giving very nearly 65 deaths per cent. of the number attacked,—a result which is probably not far from true.

District.	Mr. Farrell's.	Summary of table.
Kamroop	7,234	7,129
Durrung	1,888	1,567
Nowgong	5,321	3,414
Seebsaugor	154,531	40,451
Luckimpore	8,685	2,896
TOTAL ...	177,659	60,112

No. 9.

DEBROOGHUR.

Captain J. F. F. Cologan.

Abstract of Deaths caused by Rinderpest among the Cattle belonging to the Sepoys of the 44th Assam Light Infantry and others in the Debrooghur Cantonment during the months of May, June, July, and August 1869,—*dated Debrooghur,* 15*th November* 1869.

	Number of cattle.	Died.	Remaining.	REMARKS.
Europeans	13	10	3	The deaths amount to 64·3 per cent of stock. This is a most valuable statement, as showing the havoc which rinderpest may cause in India among a susceptible stock, and even when prompt measures are adopted to prevent its spread. These figures may be accepted as thoroughly reliable.
No. 1 Company	90	56	34	
„ 2 „	58	41	17	
„ 3 „	94	63	31	
„ 6 „	91	55	36	
„ 8 „	178	23	55	
Bazaar lines	197	122	75	
Pensioners' lines	176	103	73	
Hospital Establishment's line	58	41	17	
TOTAL ...	955	614	341	

J. F. F. COLOGAN, *Captain,*
Station Staff Officer.

No. 10.

Statistics personally collected by the Cattle Plague Commission at Madarkhat.

Names of Villages.	Original Stock.					Died of Plague.					Recovered.					Not Affected.					Present Stock.					Remarks.
	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	
Nullingia ...	...	...	...	...	17	...	...	...	...	6	...	...	...	...	9	...	...	...	...	2	..	...	...	...	11	Disease prevailed in November and December 1869 and January 1870.
	...	...	...	...	2	...	...	...	...	1	...	...	...	...	...	...	..	...	...	1	...	...	...	...	1	
	2	3	...	...	5	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	..	...	...	1	
	...	...	...	...	5	...	...	...	...	...	2	3	...	...	5	...	...	...	...	...	2	3	...	...	5	
	2	3	...	...	5	...	...	...	...	3	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2	
	2	3	...	...	5	2	...	...	...	2	...	3	...	...	3	...	...	...	...	...	...	...	3	...	3	
	3	5	1	...	9	3	5	...	...	4	...	1	...	...	1	...		...	..	...	...	1	...	...	1	
Muttuck ...	6	5	...	...	11	2	1	...	...	3	...	1	...	...	1	4	3	...	...	7	4	4	...	...	8	
	3	5	...	...	8	1	2	...	...	3	...	...	...	...	...	2	2	...	...	4	2	3	...	...	5	One cow still ill.
	10	10	...	22	42	8	9	...	19	36	...	...	...	2	2	2	1	...	1	4	2	1	...	3	6	
	2	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	..	...	...	2	2	...	...	...	2	Disease going on in Muttuck and Cooergow.
	1	3	..	...	4	1	..	...	...	1	...	...	...	...	...	...	2	...	...	2	...	3	...	...	3	Still ill.
	3	1	2	...	6	3	1	1	...	5	...	...	...	...	...	...	...	1	...	1	...	...	1	...	1	
	2	1	...	...	3	...	...	...	...	...	..	..	...	...	...	2	1	...	...	3	2	1	...	...	3	
	1	...	...	...	1	...	...	...	...	...	..	...	...	...	...	1	...	...	...	1	1	...	..	...	1	
Cooergow ...	3	...	...	...	3	1	...	...	...	1	...	...	...	...	...	2	...	...	...	2	2	...	...	...	2	
	2	..	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2	2	...	...	...	2	
	2	1	1	...	4	...	...	...	...	...	...	...	...	...	...	1	..	1	...	2	2	1	1	...	4	
	4	4	...	...	8	...	1	...	...	1	1	1	...	...	2	4	3	...	...	7	4	3	...	...	7	
	2	3	..	...	5	...	...	...	...	...	...	...	...	...	...	2	3	...	...	5	2	3	...	...	5	
	2	1	...	...	3	...	...	...	...	...	...	...	...	...	...	2	1	...	...	3	2	1	...	...	3	
	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	
	3	1	...	...	4	...	...	...	...	...	...	...	...	...	...	3	1	...	...	4	3	1	...	...	4	
	2	..	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	2	2	...	..	...	2	
	2	1	..	...	3	...	...	...	...	...	...	..	...	...	...	2	1	...	...	3	2	1	...	...	3	
	2	1	2	...	6	1	...	...	...	1	...	...	..	..	...	2	1	2	...	5	2	1	2	..	5	Died of old age.
	2	3	..	...	5	1	...	...	...	1	...	...	...	...	...	1	..	...	...	1	1	...	...	...	1	
	2	..	..	...	2	...	...	...	...	...	...	...	...	...	...	2	3	...	...	5	2	3	...	...	5	
	2	1	1	...	4	...	...	...	...	...	...	...	...	...	...	2	...	..	...	2	2	...	..	...	2	
	3	2	2	...	7	1	...	...	...	1	...	...	...	...	...	1	1	2	...	4	2	2	2	...	6	One bullock and one cow still ill.

Statistics personally collected by the Cattle Plague Commission at Madarkhat,—continued.

Names of Villages.	Original Stock.					Died of Plague.					Recovered.					Not Affected.					Present Stock.					Remarks.
	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	
Jualberia ...	6	...	...	...	6	...	..	...	...	...	...	...	...	...	..	6	...	...	...	6	6	...	...	...	6	No disease had appeared in this village.
	...	...	...	...	10	...	...	..	...	...	...	...	...	...	..	...	...	...	...	10	...	...	..	...	10	
	...	...	...	...	2	..	...	...	..	...	...	...	..	...	..	..	...	...	...	2	...	...	...	...	2	
Jogibapore ...	4	...	2	...	6	3	...	1	..	4	...	...	...	...	...	1	...	1	...	2	1	...	1	...	2	
	4	5	...	...	9	3	5	...	...	8	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	
	2	3	...	...	5	1	1	...	...	2	...	...	...	...	...	1	2	...	..	3	1	2	...	..	3	Still ill.
	2	...	...	...	2	2	...	..	...	2	...	...	..	...	...	...	...	...	..	...	...	...	...	...	...	
	3	3	..	...	6	1	3	..	...	4	2	...	...	..	2	...	...	...	...	...	2	...	...	...	2	
Salmooriah ..	3	6	...	...	9	3	2	..	...	5	1	1	...	...	2	...	...	...	...	...	1	1	...	...	2	
	4	6	...	...	10	2	3	...	...	5	2	3	...	...	5	...	...	...	..	...	2	3	...	...	5	
	2	...	...	...	2	1	..	...	...	1	.	...	..	..	..	1	...	...	...	1	1	...	...	...	1	Two eaten by a tiger.
	4	2	...	...	6	2	2	...	...	4	2	...	.	...	2	..	...	...	...	...	2	...	...	...	2	
	5	2	...	...	7	3	2		...	5	1	...	..	...	1	1	...	...	...	1	2	...	...	...	2	
	3	3	...	...	6	2	1	...	...	3	1	...	...	..	1	...	2	...	...	2	1	2	...	...	3	
	2	...	...	...	2	...	...	...	..	...	2	.	...	...	2	...	...	...	..	...	2	...	...	...	2	
	4	...	...	...	4	1	...	...	.	1	3	...	..	...	3	...	...	...	...	...	3	...	...	...	3	
	...	2	...	...	2	..	..	...	...	...	...	1	..	...	1	...	1	...	...	1	..	2	...	...	2	
	1	1	...	...	2	1	1	...	...	2	...	...	...	..	.	...	...	...	...	...	...	...	...	...	...	
	5	1	..	...	6	2	..	...	..	2	...	1	...	..	1	3	...	...	..	3	3	1	...	..	4	
	6	2	..	...	8	1	2	...	..	3	5	...	...	...	5	...	...	...	...	...	5	...	...	...	5	
Delimgah ...	4	8	...	...	12	4	6	..	...	10	...	2	..	...	2	...	...	...	...	...	...	2	...	...	2	Disease had disappeared in Salmooriah and Delimgah.
	3	4	..	3	10	2	2	...	3	7	1	2	..	...	3	...	...	...	...	...	1	2	...	...	3	
	6	14	...	...	20	5	6	...	...	11	1	8	...	...	9	...	...	...	...	...	1	8	...	..	9	
	2	5	..	...	7	2	5		...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	
	3	2	..	..	5	3	2	...	..	5	..	...	...	..	...	...	...	...	...	...	...	...	...	...	...	
	5	2	1	...	8	5	1	...	.	6	...	1	1	...	2	...	...	...	...	...	...	1	1	...	2	
	3	3	.		6	3	3	.	..	6	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	6	8	..	...	11	5	7	...	...	12	1	1	...	...	2	...	...	...	...	...	1	1	.	...	2	
	2	2	...	...	4	2	2	...	.	4	...	...	..	..	...	..	...	...	...	...	...	...	..	...	...	

Katoni ...	1	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	The head man of the village states that the disease appeared in his village in Bhador (August) last, and that his village was the first attacked in that part of the country. There is no regular communication between this village and Debrooghur; people occasionally come and go; cannot say how the disease originated.
	2	...	...	...	2	..	...	..	...	...	...	...	...	...	2	...	...	..	2	2	...	...	...	2				
	2	3	...	...	5	2	1	...	...	3	...	2	...	...	2	...	...	...	...	...	2	...	...	2				
	4	2	...	...	6	...	...	...	...	...	...	...	..	..	...	4	2	...	...	6	4	2	...	...	6			
	2	2	...	...	4	...	...	...	.	...	2	2	...	...	4	...	...	...	...	...	2	2	...	...	4			
	2	2	...	...	4	2	2	...	...	4	...	...	...	..	...	..	...	..	...	...	...	...	...	...	.			
	2	3	3	3	11	1	2	3	3	9	1	1	...	...	2	...	...	...	...	...	1	1	...	...	2			
	5	2	4	...	11	2	2	2	...	6	3	...	2	.	5	...	...	...	...	...	3	...	2	...	5			
	6	4	...	...	10	5	3	...	...	8	1	1	...	.	2	..	..	...	...	...	1	1	...	...	2			
	5	1	..	...	6	5	...	...	...	5	...	...	...	...	...	...	1	...	..	1	...	1	...	...	1			
	5	2	...	...	7	3	2	..	...	5	2	...	...	...	2	...	...	...	...	...	2	...	...	...	2			
	3	3	...	...	6	2	2	...	..	4	1	..	...	...	1	...	1	...	...	1	1	1	...	...	2			
	4	3	...	...	7	3	1	...	...	4	1	2	...	...	3	...	...	..	...	...	1	2	...	...	3			
	2	1	...	...	3			...	...	2	..	1	..	...	1	...	...	...	...	...	...	1	...	...	1		Fifteen years ago there was a like disease which killed many cattle. On this occasion the sickness was brought from Debingmookh: mortality of present attack greater. The cattle owned by the head man of the village got the disease first; he lives in the centre of the village. Cattle proceeding to several tea gardens from Debrooghur pass along a high road within some 500 yards of the village.			
	4	5	...	...	9	3	2	..	...	5	1	3	..	...	4	...	...	...	...	...	1	3	...	...	4			
	3	2	1	...	6	1	1	1	...	3	2	1	...	...	3	...	...	...	...	...	2	1	...	...	3			
	4	2	1	...	7	2	..	...	...	2	1	2	...	...	3	1	..	1	...	2	2	2	1	...	5			
	4	1	...	...	5	2	...	...	...	2	2	1	...	...	3	...	...	...	..	...	2	1	...	...	3			
	3	5	1	...	9	2	2	...	..	4	1	3	1	...	5	...	...	...	...	...	1	3	1	...	5			
	2	2	2	...	6	2	2	1	...	5	.	...	1	...	1	...	...	...	...	...	...	...	1	...	1			
	4	2	...	...	6	2	1	...	...	3	2	1	...	...	3	...	...	...	...	...	2	1	...	...	3			
	4	5	2	..	11	3	5	1	...	9	1	..	1	...	2	...	...	...	...	...	1	...	1	...	2			
	3	1	1	...	5	2	1	...	...	3	1	...	1	...	2	...	...	...	...	...	1	...	1	...	2			
	3	2	...	...	5		...	...	...	...	3	2	...	...	5	...	...	...	...	...	3	2	...	...	5			
	3	5	...	.	8	2	2	...	...	4	1	3	...	...	4	...	...	...	...	...	1	3	...	...	4			
	3	2	..	...	5	2	...	...	...	2	1	2	...	...	3	...	...	...	...	...	1	2	...	...	3			
	3	3	...	...	6	3	1	...	...	4	..	2	...	...	2	...	...	...	...	..	...	2	...	...	2			
Dokadiá ...	2	2	1	...	5	...	1	1	...	2	2	1	...	...	3	...	...	...	...	...	2	1	...	...	3			
	2	2	...	...	4	2	1	...	...	3	...	1	...	...	1	...	...	...	...	...	..	1	...	...	1			
	2	2	1	...	5	2	1	...	...	3	...	1	1	...	2	...	..	...	...	..	...	1	1	...	2			
	3	2	...	...	5	3	2	...	...	5	...	...	...	...	.	...	.	...	...	...	...	...	...	...	...			
	3	3	1	...	7	1	1	1	..	3	2	2	...	...	4	.	...	...	...	..	2	2	...	...	4			
	4	1	1	..	6	4	...	...	...	4	...	...	...	...	...	..	1	...	...	2	...	1	1	...	2			
Madarkhat ...	1	6	...	...	7	1	4	...	...	5	...	...	...	...	...	...	2	1	...	2	...	2	...	...	2	Died December 1869. Houses stand close beside high road.			
	1	5	2	...	8	1	4	...	...	5	...	..	2	...	2	...	1	...	...	1	...	1	2	...	3			
Melengol ...	2	1	3	...	6	...	...	...	...	.	.	...	...	...	...	2	1	3	...	6	2	1	3	...	6			
	4	4	...	1	9	3	2	...	1	6	11	2	..	..	2	1	...	...	...	1	1	2	...	...	3			
	4	3	1	...	8	1	...	...	...	1	...	...	...	...	...	3	3	1	...	7	3	3	1	...	7			
	4	...	4	...	8	2	..	2	...	4	2	...	2	...	4	...	...	...	...	...	2	...	2	...	4			
	3	3	..	...	6	2	3	...	...	5	1	...	...	...	1	...	...	...	...	...	1	...	...	...	1			
	2	4	...	...	6	1	4	...	...	5	1	...	...	...	1	...	...	...	...	...	1	...	...	...	1			
Habeesook ...	2	2	4	...	8	...	...	...	...	...	...	...	...	...	...	2	2	4	...	8	2	2	4	...	8	Cattle of this village graze on the *pittar*.			
	2	...	1	...	3	...	...		...	...	...	...	...	...	...	2	...	1	...	3	2	...	1	...	3			

Statistics personally collected by the Cattle Plague Commission at Madarkhat,—concluded.

Names of Villages.	Original Stock.					Died of Plague.					Recovered.					Not Affected.					Present Stock.					Remarks.
	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	Bullocks.	Cows.	Calves.	Buffaloes.	Total.	
Jamoolberia ...	8	3	1	...	12	...	...	...	...	...	..	...	...	...	...	8	3	1	...	12	8	3	1	...	12	This village has a fine pasture ground and a large *pittar* adjoining. The cattle look better than those of neighbouring villages.
	...	3	...	...	3	...	...	...	...	...	...	...	...	...	...	...	3	...	...	3	...	3	2	...	3	
	2	2	...	...	4	...	..	...	...	...	...	...	...	...	...	2	2	...	...	4	2	2	...	...	4	
	...	...	...	3	3	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	3	2	...	...	5	...	...	...	...	...	...	...	...	...	...	3	2	...	...	5	3	2	...	...	5	
	2	2	..	...	4	...	...	...	...	...	...	...	...	...	...	2	2	...	...	4	2	2	...	...	4	

SUMMARY.

	Houses.																									
Habeesook	(2)	4	2	5	...	11	...	...	...	...	...	...	...	...	...	...	4	2	5	...	11	4	2	5	...	11	Free of disease.
Jualberia	(3)	...	...	...	...	18	...	...	...	...	...	...	...	...	...	...	...	...	...	18	...	...	...	...	18	
Jamoolberia	(6)	15	12	1	3	31	...	...	...	3	3	...	...	..	...	...	15	12	1	...	28	15	12	1	...	28	
Muttuck	(8)	28	25	2	22	77	15	13	1	19	48	...	1	...	2	3	13	9	1	1	24	13	12	1	3	29	Two still ill
Cooergow	(16)	37	18	6	...	61	4	1	...	...	5	1	1	...	...	2	30	15	6	...	51	33	17	6	...	56	Three ,, ,, Disease going on.
Jogibarpore	(5)	15	11	2	...	28	10	9	1	...	20	2	...	...	...	2	2	2	1	...	5	5	2	1	...	8	One ,, ,,
Nullingiah	(8)	...	...	...	...	50	...	...	...	...	25	...	...	...	...	19	...	...	...	...	6	...	...	...	...	25	Two eaten by tigers.
Salmooriah	(12)	39	25	...		64	18	13	...	...	31	17	6	...	...	23	5	3	...	...	8	22	9	...	...	31	
Delimgah	(9)	34	48	1	3	86	31	34	...	3	68	3	14	1	...	18	...	..	...	...	...	3	14	1	...	18	Disappeared.
Katoni	(2)	88	65	15	3	171	54	32	8	3	97	27	29	6	...	62	7	4	1	...	12	34	33	7	...	74	
Dokadia	(6)	16	12	4	...	32	12	6	2	...	20	4	5	1	...	10	1	1	1	...	2	4	6	2	...	12	
Madarkhat	(2)	2	11	2	...	15	2	8	...	...	10	...	...	2	...	2	...	3	...	...	3	...	3	2	...	5	
Melengol	(6)	19	15	8	1	43	9	9	2	1	21	4	2	2	...	8	8	4	4	...	14	10	6	6	...	22	

REMARKS.

This table is the result of a house-to-house visitation by the Commission. The villages visited surround a *pittar* or rice-field, and their cattle come into free contact in grazing on this field after the crop has been removed. It is therefore remarkable to note that though disease had been going on in some of the villages since August 1869, others remained free of it at the date of visit, February 1870. The result, as regards the villages from which disease had disappeared, is as follows :—

Attacked per cent. of stock	89·8
Died per cent. of stock	59·
Died per cent. of attacked	66·

The mortality among stock is less than in the Debrooghur Cantonment—59 against 64.

The mortality among attacked corresponds very closely with that shown in No. 1—66 against 65.

As the figures of these statements were independently gathered, and on a different plan, it may be laid down as a safe generalization that in Assam a stock was diminished by more than half when visited by rinderpest, and that *two-thirds* of the cattle attacked died.

CONCLUSION.

These statements may be accepted as fair approximations of the effects of rinderpest upon the stock of affected localities, and give a tolerably consistent account of the mortality of the disease. Many other estimates, statements, &c., are scattered through Appendix No. 2, where they were placed as showing the distribution of the disease in a district. The totals of, and deductions from, these various statements it was intended to place together in the shape of a table; but so various are the circumstances—area of country, number of stock, period of time, &c.—which each statement represents, and so doubtful the reliability of many, that general conclusions drawn from materials of this sort would have been absolutely worthless. It is still unknown what percentage of stock of a district at large may be destroyed by murrain. The statistics of the Hissar Government Farm give a yearly loss of 14·4 per cent. (p.457). The Magistrate of Benares estimates the effects of a tolerably severe and widespread murrain at one per cent. of the stock of the district (p. 356). In almost all the statistical statements given, it is only the stock of small areas or of affected localities which is given, and the matter thus wears a much worse complexion than if a large area were taken or a general census given.

It is extremely probable, though it is difficult to prove it by figures, that the more populous the seat of disease, and crowded the cattle, the greater the loss among stock and attacked.

The Calcutta statistics (No. 1) give very serious results among a crowded stock. On the whole, it may be concluded that the death-rate among stock is unknown, and will not be known until some method of enumerating the cattle of a district or sub-division of it is attempted.

The death-rate among attacked by rinderpest is well known, and fluctuates between 30 and 80, or even 90, varying according to the type of the disease and the breadth of the induction. Fifty per cent. may be taken as a fair general mean statement.

APPENDIX No. IV.

REPORT ON CATTLE POISONING.

BENGAL, BEHAR, AND ORISSA.

INDEX

TO

REPORTS ON CATTLE POISONING.

[*N. B.*—Those in Italics are not printed.]

Division.	District.	From whom received.	No.	Date.	Reference and Purport.
		Precis of evidence ...	...	...	Page 645.
		Tabular Statement of cases and convictions.	...	...	Page 652.
Presidency Division.	Nuddea ...	C. C. Stevens, Esq., Magistrate.	2572	22nd July 1870	Reports upon the crime of cattle poisoning in his district, p. 653.
	„ ...	H. L. Johnson, Esq., Joint Magistrate.	537	29th June 1870	Reports on the subject of cattle poisoning, and gives a list of cases, p. 653.
	Jessore ...	A. C. Wright, Esq., Deputy Magistrate.	...	24th July 1867	Commits a confirmed cattle poisoner to the Sessions Court, p. 655.
	„ ...	Ditto ditto ...	...	8th June 1869	Judgment in a case of cattle poisoning in which the accused was convicted, p. 655.
	„ ...	H. Farrell, Esq., V. S., R. A.	...	12th Sept. 1869	Submits a report of his proceedings in Jessore District, p. 655.
	„ ...	E. J. Barton, Esq., Officiating Magistrate.	G 137	18th Sept. 1869	Comments on the above letter, and generally on the prevalence of cattle poisoning, p. 657.
	24-Perghs. ...	A. Smith, Esq., Magistrate.	240	28th May 1870	Forwards precis of five cases of cattle poisoning, p. 657.
	„ ...	Inspector of Police, Basseerhaut.	...	2nd Sept. 1870	Forwards judgment in a case of cattle poisoning, p. 659.
	„ ...	Officiating Magistrate, Alipore.	427	10th Sept. 1870	Forwards precis of two cases of cattle poisoning, p. 660.
	„ ...	Ditto ditto ...	422	13th Sept. 1870	Forwards precis of a case of cattle poisoning tried before the Deputy Magistrate of Barripore, p. 661.

Index of Records.

Division.	District.	From whom received.	No.	Date.	Reference and Purport.
Orissa.	Cuttack ...	W. Macpherson, Esq., Magistrate.	1144	16th Aug. 1870	Reports that there is nothing in the records to show that cattle poisoning is on the increase, and recommends that the crime should be made cognizable by the Police, p. 661.
	„	J. F. Harrison, Esq., Deputy Magistrate.	...	30th Apl. 1870	Judgment in a case of cattle poisoning, p. 662.
		W. C. Taylor, Esq. ...	...	21st Dec. 1869	Ditto ditto, p. 662.
	„	T. Kirkwood, Esq.,	...	29th Apl. 1869	Ditto ditto, p. 663.
	„	Officiating Joint Magistrate.			
	„	Baboo Kalinath Bose, Deputy Magistrate.	...	15th Sept. 1869	Ditto ditto, p. 663.
	Balasore ...	*J. Beames, Esq., Magistrate.*	231	*1st July* 1870	*Reports that no cattle poisoning has existed or now exists in his district.*
	Pooree ...	*Walton, Esq., Magistrate.*	484	*25th ditto*	*Reports that the crime has never prevailed in his district.*
Dacca.	Dacca ...	*D. R. Lyall, Esq., Magistrate.*	1281	*14th ditto*	*Reports that no case of cattle poisoning has occurred in his district within the last* 12 *months, and that there is no reason to believe that the crime ever prevailed to an appreciable extent.*
	Backergunge	*H. Beveridge, Esq., Officiating Magistrate.*	355	*30th ditto*	*States that the crime of cattle poisoning is rare in his district, only one true case having occurred within* 12 *months, and that from a motive of private enmity; poison, unknown, was given in a leaf.*
	Furreedpore	*C. A. Kelly, Esq., Officiating Magistrate.*	445	*8th Aug.* 1870	*No cases of cattle poisoning have occurred in his district for the last few years.*
	Mymensing	F. B. Simson, Esq., Commissioner.	235	9th Nov. 1868	Reports the discovery in Mymensing of an organized system of cattle poisoning for the sake of hides, p. 664.
	„	*G. Graham, Esq., Magistrate.*	723	*5th July* 1870	*No cases of cattle poisoning have occurred for the last few years.*
	Sylhet ...	*J. S. Drummond, Esq., Magistrate.*	428	*9th ditto*	*Ditto ditto.*
	Cachar ...	*O. G. R. McWilliam, Esq., Deputy Commissioner.*	578 *A*	*11th ditto*	*Ditto ditto.*
Chittagong.	Chittagong...	*H. C. B. C. Raban, Esq., Officiating Magistrate.*	784	*11th ditto*	*The offence appears not to be known in the district.*
	Noakhali ...	*E. H. Wingfield, Esq., District Superintendent of Police.*	70	*1st ditto*	*The offence is suspected. An instance is cited where the arrival of chamars was accompanied by mortality among cattle.*
	Tipperah ...	*R. F. Rampini, Esq., Joint Magistrate.*	825	*6th Aug.* 1870	*Says that the crime is not unknown, but that, owing to the prevalence of cattle plague, the chamars find that there is no lack of hides.*

Index of Records.

Division.	District.	From whom received.	No.	Date.	Reference and Purport.
Burdwan.	Burdwan ...	W. E. Ward, Esq., Officiating Magistrate.	90 *P*	25th July 1870	Reports that the crime of cattle poisoning is a rare occurrence, and forwards judgment in a case of cattle poisoning, p. 664.
	Bood-Bood...	Baboo Protabnarain Sing, Deputy Magistrate.	13	10th June 1867	Judgment in a case of cattle poisoning, p. 665.
	Bancoorah...	*J. P. Grant, Esq., Magistrate.*	...	*23rd July* 1870	*Reports that cattle poisoning is not prevalent, and certainly not on the increase in his district.*
	Beerbhoom ..	J. T. Allen, Esq., Officiating Magistrate.	482	11th Oct. 1870	*Writes of two cases of cattle poisoning as having been brought to the notice of the authorities in* 1869, *of which one ended in conviction.*
	Hooghly ...	F. H. Pellew, Esq., Magistrate.	311	6th Aug. 1870	Reports that only one case of cattle poisoning occurred in his district, and states that the crime is not on the increase, p. 666.
	,, ...	J. A. Hopkins, Esq....	...	18th Nov. 1869	Finding and sentence in a case of cattle poisoning, p. 666.
	Howrah ...	*George Smeaton, Esq., Assistant Magistrate.*	500	*29th July* 1870	*States that two cases of cattle poisoning have been brought to notice during the last* 3 *years, and none within the last year; there is no reason to believe that the crime is on the increase.*
	Midnapore ..	J. C. Price, Esq., Magistrate.	123	23rd July 1870	Gives statement of six cattle poisoning cases that were brought to notice, p. 666.
Chota Nagpore.	Hazareebaugh	Lieut.-Col. H. M. Boddam, Deputy Commissioner.	702	9th Aug. 1870	Reports that in October 1869 a man was arrested at Paghar Thanna with a seer of white arsenic, and on inquiry it was found that a party of chamars had come from Gya to scatter poison on the fields p. 667.
	Chota Nagpore	Colonel E. T. Dalton, C. S. I.	2250	18th ditto ...	Requests to know what was done to the men caught with arsenic alluded to in the foregoing report, p. 668.
	Hazareebaugh	Lieut.-Col. H. M. Boddam, Deputy Commissioner.	755	24th ditto ...	Explains that the two culprits were boys, p. 668.
	,,	Colonel E. T. Dalton, C. S. I., Commissioner, Chota Nagpore.	2349	30th ditto ...	Inquires again what was done with the man in whose possession arsenic was found, p. 668.
	,,	Lieut.-Col. H. M. Boddam, Deputy Commissioner.	785	3rd Sept. 1870	States that the man was released, as no evidence of poisoning could be adduced, p. 668.

Index of Records.

Division.	District.	From whom received.	No.	Date.	Reference and Purport.
Chota Nagpore,—*continued.*	Lohardugga	*H. L. Oliphant, Esq., Deputy Commissioner.*	1685	*9th Aug.* 1870	*Reports that he cannot find that any cases of cattle poisoning have been brought to notice during the last few years. Has no doubt that cases occur, but does not believe that the crime exists to any great extent, and thinks it is on the decrease.*
	Manbhoom	Lieut. C. H. Garbett, Deputy Commissioner	1421	13th July 1870	Reports that out of three cases of cattle poisoning reported during the past 12 months, only two proved to be true, p. 668.
	Singhbhoom	*W. Ritchie, Esq., District Superintendent of Police.*	426	*1st July* 1870	*Reports that cattle poisoning does not exist in the district.*
		W. H. Hayes, Esq., Deputy Commissioner.	278	*7th ditto* ...	*Ditto ditto.*
Patna.	Patna ...	A. C. Mangles, Esq., Officiating Magistrate.	1017	18th July 1870	Forwards a narrative of cattle poisoning cases that occurred in different years, and the mode of administering poison, p. 669.
	Dinapore ...	Captain Hedayut Ali	...	11th June 1869	Observes that the hide trade has increased tenfold since 1840, and that chamars have consequently taken a good deal to poisoning cattle. Describes the various modes of poisoning, p. 671.
	Gya ...	*Magistrate* ...	404	*6th July* 1870	*Reports that during the past year no cases of cattle poisoning are reported to have occurred in the district.*
	Shahabad ...	W. H. D'Oyly, Esq., Officiating Magistrate.	1560	3rd Sept. 1870	Reports the prevalence of cattle poisoning in his district, and gives a brief narrative of a few cases that were brought to notice, p. 673.
	Champarun	*C. F. Worsely, Esq., Magistrate.*	404	*6th July* 1870	*Reports that no cases of poisoning cattle have been sent for trial during the past 12 months.*
		W. B. Hudson, Esq., Indigo Planter.	...	24th Oct. 1870	States that cases of cattle poisoning do occur in the district to a certain extent, p. 674.
	Sarun ...	C. B. Garrett, Esq., Magistrate.	1173	5th Sept. 1870	Reports that nine cases of cattle poisoning were reported to have occurred in the district during 12 months, and gives a brief narrative of those cases, p. 674.
	Tirhoot ...	Major J. G. Reeves, District Superintendent of Police.	41	9th July 1869	Reports the existence of cattle poisoning and makes certain suggestions to put a stop to this practice, p. 675.
		Captain R. M. Skinner, District Superintendent of Police.	37	2nd July 1870	Gives a precis of six cases of cattle poisoning, and writes generally about the prevalence of that crime in the district, p. 676.

Division.	District.	From whom received.	No.	Date.	Reference and Purport.
Patna,—*continued.*	Tirhoot ...	F. M. Halliday, Esq., Officiating Magistrate.	144	22nd July 1870	Reports upon the crime of cattle poisoning in the district, p. 677.
	„	Major J. G. Reeves, District Superintendent of Police.	...	30th Sep. 1870	A special report of a case of cattle poisoning, p. 677.
	„	E. Macnaghten, Esq., Indigo Planter.	...	23rd Oct. 1870	States that cattle poisoning for the sake of skins is prevalent in the district, and describes the mode of poisoning, p. 677.
	„	J. Tripe, Esq., Indigo Planter.	...	10th Nov. 1870	Writes of the several methods of poisoning cattle practised in the district, p. 678.
	„	E. D. Urquhart, Esq..	...	*2nd ditto* ...	States that cattle poisoning is practised by the chamars for the sake of skins, p. 678.
	Purneah ...	*J. Cockburn, Esq., District Supdt. of Police.*	882	*20th Oct.* 1870	*States that the practice is supposed to be prevalent, but that no cases have been brought to notice during past five years.*
Bhaugulpore.	Bhaugulpore	V. T. Taylor, Esq., Magistrate.	819	14th July 1870	States that only three cases of cattle poisoning are reported to have occurred during the last 12 months, and gives a precis of those cases, p. 678.
	Monghyr ...	Magistrate ...	...	10th *ditto* ...	Gives a brief history of six cases of cattle poisoning that took place in his district, p. 680.
	Sonthal Pergunnahs.	*Assistant Commissioner.*	983	*28th June* 1870	*Reports that no cases of cattle poisoning have been reported within the last* 12 *months, though it is surmised by the people that the practice exists.*
	Deoghur ...	*A. W. Cosserat, Esq., Assistant Commissioner.*	698	*24th ditto* ...	*Reports that cattle poisoning does not exist in the district.*
	Doomka ...	*Wm. M. Smith, Esq., Assistant Commissioner.*	792	.....	*No cases of cattle poisoning occurred in this district during the last three years.*
Rajshahye.	Rajshahye ...	C. E. Lance, Esq., Officiating Commissioner.	130	29th July 1870	Reports that cattle poisoning is rare in his division, and gives the history of one case that occurred in Rajshahye, p. 680.
Cooch Behar.	Cooch Behar.	*Col. J. C. Haughton, C. S. I., Commissioner*	1710	*22nd June* 1870	*Reports that no cattle poisoning case has been brought under judicial notice in his Division.*
	Nowgong ...	*Captain T. B. Michell, Deputy Commissioner.*	200	*30th ditto* ...	*Reports that cattle poisoning is entirely unknown in his district.*

Index of Records.

Division.	District.	From whom received.	No.	Date.	Reference and Purport.
Cooch Behar,—*continued.*	Naga Hills...	*Lieut. J. Butler, Deputy Commissioner.*	148	8*th July* 1870	*Reports that cattle poisoning is entirely unknown in his District.*
	Seebsaugor...	*Capt. A. E. Campbell, Deputy Commissioner.*	797	25*th ditto* ...	*Ditto ditto, and that there is no hide trade.*
	Luckhimpore	*Lieut. M. O. Boyd* ...	108	5*th ditto* ...	*Ditto ditto.*
	Kamroop ...	*Major Thomas Lamb, Deputy Commissioner.*	116	28*th June* 1870	*Reports that not a single case of cattle poisoning appears to have ever been instituted in this district.*
	Khasia and Jyntiah Hills	*Major R. Stewart, Deputy Commissioner.*	594	1*st July* 1870	*Reports that in his district no cattle poisoning case occurred during the last year.*
Assam.	Durrung ...	*Deputy Commissioner...*	435	2*nd Aug.* 1870	*Reports that he has not heard of any case of cattle poisoning in his district, nor is there any hide trade.*

PRECIS OF EVIDENCE REGARDING CATTLE POISONING.

1.—History.

Précis. It has been attempted to deduce from the old Hindoo records an evidence of the early existence of this crime. "It is ordained," Dr. Chevers writes in his Manual of Medical Jurisprudence, "in the institutes of Menu that when cattle die the herdsman shall carry to his master their ears, their hides, their tails, the skin below their navels, their tendons, and the liquor exuding from their foreheads (?) He was also directed to point out their limbs." This direction would rather seem to be aimed at the crime of cattle lifting or stealing, which was at one time very prevalent in India, than cattle poisoning. The author just quoted gives a very interesting sketch of the glimpses of this practice, which we obtain in the scattered annals of Indian crime. Dr. Chevers also records interesting notes on horse and elephant poisoning, but these are omitted. His notes regarding cattle poisoning are shortly as follows:—

1846. A man was tried at Sholapoor, in the Bombay Presidency, for poisoning a bullock and a buffalo with balls of a white substance sewn up in *kurbee* leaves. He was found guilty, and the Judge, in sentencing him, remarks on the numerous instances in which *mhars* had been detected in poisoning cattle *for the sake of their carcasses.*

1851. Four chamars were sentenced by the Judge of Sarun for poisoning cattle *for the sake of their hides.* The poison used was *mahoor* (aconite), and this was introduced into a puncture on the head. The remark is made in the record of this trial that the practice was a common one for the purpose alleged.

1852. Balls, said to be used by chamars for killing cattle for the sake of their hides, by thrusting them into the *rectum*, were given up by some chamars of Pubna who confessed to the crime. On analysis their nature could not be discovered.

1853. Balls, said to be extensively used for poisoning cattle in Jessore, were sent for examination in November 1853, but their nature was not discovered.

1854-55. A most important discovery of an organized system of cattle poisoning was made in Azimgurh by Mr. G. Campbell, of which a detailed narrative is given below (p. 685). Some 500 poisoners were arrested, about 20 maunds of arsenic impounded, and a correspondence leading up to a proposed special enactment ensued. Act IV of 1856,* which provided for the offence of cattle poisoning being cognizable by the Police, and authorized severe punishment and fine in cases of this description, appears to

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* Act No. IV of 1856.

An Act to prevent the malicious or wanton destruction of cattle.

Preamble. Whereas it is expedient to make provision for the apprehension and punishment of persons who maliciously or wantonly destroy cattle; It is enacted as follows:—

Malicious or wanton destruction of cattle to be proceeded against under Regulation XX, 1817, as a heinous offence. I.—Within the territories of the Presidency of Fort William in Bengal whoever is charged with maliciously or wantonly causing the death of any cattle, the property of another, may be proceeded against in the mode prescribed in Section XXV, Regulation XX, 1817, of the Bengal Code, for proceeding against persons charged with a heinous offence, and shall, on conviction before a Magistrate or other officer exercising the powers of a Magistrate, be liable to imprisonment with hard labor for any period not exceeding three years, or, at the discretion of the said Magistrate, may be committed for trial before the Sessions Judge, and on conviction shall be liable to imprisonment with hard labor for any period not exceeding nine years.

Provisions of Act XVI, 1850, applicable. II.—The provisions of Act XVI of 1850 shall be applicable to persons convicted of offences under this Act.

PRECIS.

have been the product of this correspondence. The Act was abolished by the Penal Code, and there is no record to show how it worked, or whether it was ever utilized for the repression of this crime.

1856. A cattle poisoner of Sarun was caught in the act: 53 grains of arsenic were found in the ball which was taken out of the bullock's mouth. The Judge remarked that thousands of bullocks had in this way been destroyed in a neighbouring district, and many in Sarun.

1862. Poisoning cattle with arsenic balls is said by Native Surgeon R. Moodelly to be a very common practice with the *chucklers* in Nellore, Madras Presidency.

1863. Dr. S. E. Burton Brown, Chemical Examiner in the Punjab, states that poisoning cattle with arsenic and aconite for the sake of their hides is not an uncommon practice.

1868. The poisoning of cattle for the sake of their hides by the Jessore *moochees* is mentioned in an appendix to the Bengal Jail Report.

An organised system of cattle poisoning was discovered in Mymensing. It was conducted by gangs of moochees who took advantage of a reported epizöotic to cover their proceedings. Arsenic was found in their houses and in the stomachs of some of the dead cattle.

1869. Mr. C. Daniell, Magistrate of Jounpore, when on tour in his district in the cold weather of 1868-69, found that the deaths among cattle, which were then occurring to a large extent, were attributed to poison administered by chamars for the sake of their hides. He investigated the matter thoroughly, and adduced grounds for the belief that it was a very common practice. His proceedings stimulated inquiry in neighbouring districts, and the crime was found to be practised to a greater or less extent in all the surrounding districts,—Ghazeepore, Benares, Azimgurh, Mirzapore, and Allahabad. Full details are given in the sequel, and an interesting summary account of the matter by Captain C. A. Dodd, Personal Assistant to the Inspector General of Police, North-Western Provinces, will be found at page 728.

In February 1869, the existence of the crime was discovered in Oudh in the District of Fyzabad, on the borders of the Azimgurh and Jounpore Districts. A narrative of the proceedings connected with this discovery is given below.

Two papers written in the same year—one by Captain Hedayut Ali, A. D. C. to the Commander-in-Chief (page 671), and the other by Mr. Farrell, Veterinary Surgeon (page 655)—give a general description of the objects, methods, and agents of perpetrating this crime.

1870. Cases continued to crop up here and there, both in the North-Western Provinces and Lower Bengal, but no organized system of cattle poisoning was anywhere brought to light. All the information regarding this subject which could be procured was collected, and the subject specially inquired into in all the places visited by the Commission.

2.—PREVALENCE.

From these scattered notices it appears that cases of this crime have at one time or other been detected in each of the presidencies of India and provinces of Bengal. The crime is mostly represented by isolated instances, or single cases with one or more defendants; but there is a general feeling evident in many of the judgments printed below that the one detected case is an evidence of many undetected cases. In Azimgurh, in 1854; in Mymensing, in 1868; in Jounpore, Fyzabad, and Jessore, in 1869, the crime was found to have assumed a serious magnitude, and to have become a system or organization. Raids of gangs of chamars with poisoning intent are said to take place in the Terai on the Nepal frontier. An instance of a similar raid is given by

the Deputy Commissioner of Hazareebaugh (page 667), and the District Superintendent of Police of Noakhally mentions a similar invasion of moochees whose advent coincided with increased mortality among cattle. The general feeling of Magistrates and Police Officers seems to be that much more of this crime is in existence than the cases brought to light would represent. In the return of cases which occurred in the Courts of Lower Bengal for 1867-68-69, obligingly furnished by Dr. Mouat, late Inspector General of Jails (page 652), 23 districts out of 49 are represented. This proves the general distribution of the crime, if the number of cases—147—does not evidence its frequency. A similar return from the North-Western Provinces (page 685) notes the existence of cases in only 11 districts out of 33, but the number of cases reported in these is considerably greater—231. PREFS.

In the return received from the Punjab (page 738), the number of cases instituted under Sections 428 and 429 of the Penal Code (killing, poisoning, maiming, or rendering useless animals) during the 5 years 1865—1869 is 1,462. The return does not distinguish poisoning, nor is the number for each district specified. In Oudh only 8 cases were instituted in 2 districts, Pertabgurh and Baraich, during the years 1867-68-69. The table below gives a summary of returns received from the four provinces of the Bengal Presidency: —

	1867.		1868.		1869.		TOTAL.	
	Cases instituted.	Persons convicted.	Cases instituted.	Persons convicted.	Cases instituted.	Persons convicted.	Cases instituted.	Persons convicted.
Lower Bengal . .	35	29	34	34	78	94	147	157
N. W. Provinces ...	1	1	31	16	214	214	246	2 1
Punjab ...	289	163	334	178	296	168	919	509
Oudh	..	...	...	...	8	10	8	10
TOTAL ...	325	193	399	228	596	486	1,320	907

The general feeling of the people, as manifested in the evidence recorded by this Commission, appears to be that the crime is not a prevalent one. There may, however, have been reasons for denying its existence. The natives of this country are known to be averse to making avowals or complaints which may lead to action—legislative, magisterial, or police; and it is only when urged by a very pressing, immediate, and personal sense of wrong that they would willingly make a positive statement which would entail investigation or lead to a disturbance of their quiet village life.

Discoveries of the prevalence of the crime have in most cases rather resulted from the activity of a European official than from information volunteered by the aggrieved, and in some cases, when complaints have been made, it is only, as the proof led reveals, after much loss of cattle has been sustained by the owner or village. In some instances, indications exist of the poisoners being suspected, watched, caught, and brought to justice; and in Jounpore, where the crime seems to have become very aggravated, the villagers entertained and expressed a positive belief in the criminal practices of the chamars, and sometimes subjected them to a rude Lynch law. The statement volunteered by the Adampore villagers, and supported by the curious document printed at page 724, is an illustration. There have been instances too when the presence of real disease was interpreted as poisoning, and when suspicions of foul play were unfounded. Taking all these circumstances into consideration, and looking broadly at all the evidence accumulated upon this subject, and considering also the

PRECIS.

difficulty of detection, and its not being cognizable by the Police, the prevalence of the crime must be acknowledged to be very general throughout the Bengal Presidency.

3.—MOTIVE.

The main motive to this crime is the hide of the animal. This fact stands out clear and emphatic in all the evidence and records of cases. A similar motive has led to the poisoning of horses, which was at one time so common a practice at Cawnpore, Barrackpore, and elsewhere. For a paltry gain or scanty livelihood, the practitioners of this crime scruple not to sacrifice property of one hundred-fold greater actual value and incalculable potential value. The motive is moreover intensified by the pressure put upon the purveyors of hides by the agents, through the system of advances.

The hide trade, a perfectly legitimate and necessary commercial pursuit, has through this system become responsible for numberless villanies. Of late years, the demand for "East Indian kips" and buffalo hides and horns has greatly increased. The extent of the increase is exhibited in the table printed at page 71, and borne witness to by Mr. W. C. Hannah, a hide broker of Calcutta, whose evidence is given at length at page 93. The smallest scrap of East Indian leather is of value in the leather market, and both slaughtered and dead hides and rejections are sought for with eagerness. The demand at the export towns, represented by men and firms with large dealings, spreads through nearly the whole of India, through a chain of Native agency, and reaches the village chamar. The chain may be long or short, simple or complex, but it begins and ends in the same way, and the usual need of supply arises, and keen competition, the necessary concomitant of a thriving trade, springs up. Thus it happens that local agents are induced to bind down the purveyors of hides by legal instruments, and attach them by money advances. This system is described by Captain Hedayut Ali, Mr. Farrell, and others, but its best evidence will be found at page 228, where the evidence of an agent and transcript of a contract are given. The inevitable effect of this system on an utterly unprincipled chamar is very evident; and whether the agents are themselves privy to the villany, as in many instances they have been found to be, or not, the motive thus supplied is as strong as it could be. Its influence on the crime may be inferred from the fact that the poisoning of cattle is utterly unknown in Assam, where the hide agents have not as yet pushed their operations. Other minor motives are occasionally mentioned,—spite, revenge, or malice, the flesh of the animal, a means of terrorism, &c.; but these and others are quite exceptional.

4.—THE POISON.

In the immense majority of cases the poison is arsenic, white or yellow—white as a rule. This is also one of the fixed features of the crime. Dr. Chevers mentions that since 1855 the records of the Chemical Examiner, Calcutta, show 62 cases of poisoning cattle with white arsenic, and in a report for 1869 by the Chemical Examiner, North-Western Provinces, an extract of which is given below, arsenic is declared to be the usual poison. Other poisons are mentioned,—*datura* (datura alba or fastuosa), *coonch* (seeds of abrus precatorius), *akoond* or *mudar* (bark of root of calotrophis gigantea), *oojur jahar* (Jatropha Purgans,) &c. A curious, and apparently very exceptional, method is mentioned at (page 678), where it is said that the head of an animal dying of cow-pox is buried until it becomes putrid, and a needle poisoned by insertion into it..

5.—THE AGENTS.

These are in the overwhelming majority of cases chamars or moochees, skinners, chucklers, or village leather dealers, who assert a right by tradition or consent, or both, to the hides of all animals dying in the village to which they are attached (and one or more families of these people is attached to every village

in India). They also prepare the hide by a rude process of tanning (page 383), and supply the shoes and other leathern articles required for local use. The conditions under which they get the hides vary. In some places they are allowed to take them without let or hindrance; in other places they have to pay for the right of removing hides, or nominally for the rent of the piece of waste land on which the carcasses are thrown (*bhagar*); in other places the owner takes a pair of shoes out of the hide, or part of the hide or a proportion of them; in some places a certain class of hides belongs to the owner, and another class to the moochee; and in some places the chamar is merely paid for his work, the owner taking the hide. This arrangement, under whatever form it exists, is a matter of convenient village usage and is jealously guarded, as it relieves owners of cattle of an office which their caste would not permit them to perform, and furnishes an occupation and means of livelihood to the moochee. The latter has been known to bring owners who buried their cattle to law, and gain their cause; and in the periodical settlement contracts of Upper India this is included as one of the village customs or rights whose continuance is guaranteed. In the development of the hide trade, however, skin purveying has become a specialty of chamars, who gradually have relinquished their other traditionary village customs, relations, and obligations, and have become hide collectors pure and simple, rising from this original position to conduct large contracts and employ numerous subordinates. These men lose their village interests, and having abandoned cultivation, cattle owning, and everything that would give them an interest in keeping cattle alive, have only one thought, namely, the number of hides they can collect. These are the dangerous classes. The primitive village chamar is a member of the village community and shares its interests; he is moreover known and his pursuits are intimately watched; he even may be the rural *chowkeedar* or policeman. If he yields to the allurements of agents and tries to poison, he is detected, and being wholly dependent for comfortable existence on the village, his tricks are put down, or he is handed up to justice. It is the independent hide contractor or merchant, who does a large business and frees himself from village restraint and traditional obligations, who is the object of suspicion or dread, and his myrmidons sometimes made poisoning forages into foreign districts or villages, pages 667, 676, &c.

The foregoing applies to the trade in dead hides only. The trade in slaughtered hides is conducted by Mussulmans, and is above suspicion. It is a matter of keen business, and conducted methodically, openly, and fairly. An excellent idea of the magnitude of the dead hide business was obtained by a visit to the hide merchants' quarter at Cawnpore. Heaps of pieces of dead hides, awaiting transport to Calcutta, lay on the banks of the Ganges. These had come from Oudh, and Captain Stewart described a continual influx of people carrying all sorts of sizes of skins from the Oudh side of the river into Cawnpore (page 388). Dacca, Patna, Cuttack, Midnapore, Burdwan, Purneah, Mirzapore, Meerut, Delhi, Agra, and many other cities of Bengal present the same feature on a smaller scale, and the active demand for hides has no doubt operated similarly in other presidencies. The cases in which persons other than chamars have been implicated in cattle poisoning are very few, and have implicated low or allied castes. The hide trade has hitherto been unknown in Assam, and consequently the absence of the crime of cattle poisoning is especially marked in that province.

6.—The Mode of Operation.

This also is tolerably constant. The arsenic is strewn on the pasture, or wrapped up in a few leaves—plantain, castor-oil, *bajra*, or *mowa*, or mixed with a little grass, or placed in the skin of the ear of Indian corn, or made into a bolus with *atta*, *boosee*, or mustard-oil. The chamar drops it on the field close to where a selected animal is grazing, or employs a woman or child to do so, while he lurks close by, or the ball is dropped into the *nand* or manger among

PRECIS. the chopped straw or husks on which the animal is feeding; or, when the culprits are very bold, they seize a cow and place the poison in its mouth, or even enter a cow-house for that purpose.

Other methods are enumerated, namely, pricking the animal with a poisoned needle and introducing poison into the rectum or vagina, but they are quite exceptional.

7.—THE SYMPTOMS.

The symptoms of arsenical poisoning vary much with the size of the dose. From one to four drachms seems to be the quantity usually given. The animal is seized with a trembling fit soon after administration, great abdominal pain ensues, and the beast writhes in agony and foams at the mouth; if life is prolonged beyond this stage, the stomach swells, a watery diarrhœa or acute dysentery supervenes, great thirst is manifested, tetanic twitches are observable, and exhaustion causes death: this event generally ensues in a few hours. The symptoms of poisoning are very well known in some places, and, as a rule, villagers are so observant and really intelligent in the matter of cattle ailments that they can distinguish the indications of disease from those of poisoning. There are similarities, however, between these and some cases of rinderpest and hoven, which lead to mistakes in one direction or other. The symptoms of other methods of poisoning cattle have not been specially observed or recorded.

8.—THE SOURCE OF THE POISONING.

The table at page 7—shows that there is an immense yearly importation of arsenic into every port of India. The amount of this importation does *not* bear any striking relation to the export of hides. The arsenic so imported finds its way into the shops of *bunneahs* in every bazaar in India. Its sale is supposed to be subject to a general police surveillance; but, except in the Bombay Presidency, there is no Act controlling the sale. In 1865 the subject of regulating the sale of poisons was discussed all over India, but the only measure which followed on the discussion was Bombay Act VIII of 1866, which places restrictions upon the sale of aconite, cocculus, datura, henbane, nux vomica, St. Ignatius bean, calabar bean, white, yellow, red, and green arsenic, and corrosive sublimate, and requires a license to be issued by Municipal Commissioners and Collectors, and the registration of sales. How this Act has worked, the documents printed below (p. 738) will show: it does not appear to have done much appreciable good or harm. The broad fact that the chamars can readily obtain any quantity of arsenic they desire is generally admitted. Arsenic has been found on their persons and in their houses, and in some cases they have confessed to having been supplied by hide agents or other chamars. The Azimgurh investigations of 1853, the Jounpore revelations of 1869, the Chota Nagpore discovery, and the Patna and Tirhoot facts throw some light upon the facility of procuring and source of supply of this deadly agent. As for the other poisons, they are to be had for the picking up.

9.—DIFFICULTIES IN DETECTION.

(*a*). The main difficulty complained of by reporters is, that the Police cannot take any steps in regard to this crime until they are ordered to do so by the Magistrate,—that is, it is not one of those offences cognizable by the Police under the Criminal Procedure Code. Accordingly, the investigation of the crime depends upon information laid before a Magistrate. Now, natives are intensely averse, as a rule, to render themselves liable to the inconvenience, the worry, the hindrance of daily occupations, the delay, and in some cases the expense, loss of time, or oppression which legal proceedings in our Courts involve; and unless the sense of wrong sustained is urgent, the proof and the culprit certain, they hesitate to approach the dreaded district potentate, or put in motion the heavy machinery of legal procedure. Accordingly, cases

seldom turn up unless the culprit is caught red-handed. Then, after complaint has been made, when the policeman arrives on the spot, he finds a few bones, vultures and jackals having devoured the carcass, and seeks in vain for the kind of proof which is of most value in cases of poisoning—the discovery of the poison in the body of the dead animal. In fact, this species of proof has very seldom been advanced, and convictions have rather rested on men being caught in the act, or the poison being found on them, and afterwards proved, to be poison, or picked up from beside the cattle, or out of the feeding trough, or out of the mouth of the animal.

(*b*). The village chamar performs offices which the other villagers are precluded by custom or caste from performing for themselves,—the removal of the dead, the manufacture of necessary leathern articles of wear or use, and the attendance upon their wives at childbirth, an office performed by chamars' wives, and, in some places, the tillage of the land. If the chamars are imprisoned, alienated, banished, or offended, these services remain unperformed, and the consequences need not be described. The chamars have this strong hold upon the village community, and when they listen to the temptation of unscrupulous hide agents, they may practise poisoning to a large extent with impunity. The existence and force of this influence is nowhere better shown than by the documents wrested from the Adampore and Luckimpore villagers, through the influence of the zemindar, in which the chamars, on receiving a money consideration, undertook to save the villagers from further loss of cattle (p. 723, 725).

(*c*). Add to this a superstitious belief in the demoniacal influence or power which chamars are supposed to be capable of commanding, and it is not strange that complaints before Magistrates cannot be accepted as a true index of the extent of this crime.

(*d*). The frequency of prevailing murrains import another difficulty into detection. The remark that chamars "work under the cloak of murrain" is a common one, and its force in this regard may be easily understood.

10.—THE RECOMMENDATIONS MADE.

These have emanated from Magistrates and Police Officers, and may be summed up as follows:—

1*st*.—Restrict, regulate, and register sale of poisons: this recommendation is made by all the officials who have taken an active interest in the subject.

2*nd*.—Make the offence cognizable by the Police: this also is an opinion unanimously expressed by those Magistrates and Police Officers who have paid attention to the crime.

3*rd*.—Enforce destruction of hides and burial of carcasses: recommended by Captain Dodd (p. 733), and in many cases the adoption of this plan is said to have put a stop to suspicious deaths (pp. 117—678).

4*th*.—Increase the punishment. Five years' imprisonment and fine may be awarded under the existing law, (Sec. 429 I. P. C.)

5*th*.—Register sale of hides: this is recommended by Captain Dodd, but not supported by Mr. Mayne, the Commissioner of Allahabad, who thinks it would press hardly and unfairly on the trade.

6*th*.—Analyse contents of stomach in suspicious cases: this recommendation is made by Captain Dodd and Dr. Walker, and supported by Mr. Mayne; but the great difficulty is, as Mr. Johnson points out, to obtain anything for analysis, owing to the delay in investigation.

Of these, Nos. 1, 2, 5, and 6 appear to be the most appropriate and feasible. The hide trade is a great and necessary industry, and it would be absurd to destroy valuable material if the end could be accomplished otherwise Systematic and severely strict and searching local inquiry can be the only

PRECIS.

safe guide to the measures necessary to put a stop to this practice; and informers or approvers might no doubt be retained on sufficient consideration, and would reveal the circumstances of organization and commission in sufficient detail to guide preventive or punitive action. The information which has been thrown together in this appendix is sufficient to draw attention to this nefarious practice, and to indicate in a general way its method and extent; but action, to command local incidents, must rest on local information as to conditions, agencies, &c., beyond the broad truths generalized from many records of particular events. These broad truths may indicate a wide line of action or a general permissive law, but, as in dealing with diseases of cattle, the action adopted to be effective must be local, based on local knowledge. In fine, it does not appear from the facts here adduced that poisoning is responsible for more than a comparatively trifling share of the great mortality among cattle in India.

Summary of cases instituted, and persons convicted of the crime of cattle poisoning in the Lower Provinces during the years 1867, 1868, *and* 1869.

Division.	District.	1867.		1868.		1869.		Total No. of cases instituted.	Total No. of persons convicted.
		No. of cases instituted.	No. of persons convicted.	No. of cases instituted.	No. of persons convicted.	No. of cases instituted.	No. of persons convicted.		
Presidency ...	Nuddea ...	2	2	5	1	2	4	9	7
	Jessore ...	...	...	...	...	2	3	2	3
	24-Pergunnahs ...	6	4	6	5	8	3	20	12
Orissa ...	Cuttack ...	...	...	1	...	5	3	6	3
	Pooree ...	1	4	1	1	2	3	4	8
Dacca ...	Backergunge ...	...	...	...	...	1	1	1	1
	Mymensing ...	...	...	3	9	...	...	3	9
Burdwan ...	Burdwan ...	1	1	...	...	1	1	2	2
	Bancoorah ...	3	3	...	...	...	...	3	3
	Beerbhoom ...	...	...	3	3	2	1	5	4
	Hooghly ...	5	6	...	...	1	1	6	7
	Midnapore ...	1	1	1	1	4	2	6	4
Chota Nagpore ...	Lohardugga ...	...	...	...	...	1	1	1	1
	Maunbhoom ...	2	2	1	...	3	1	6	3
Patna ...	Patna	8	3	6	8	16	22	30	33
	Gya	...	...	1	..	3	5	4	5
	Sarun	2	1	2	1	8	7	12	9
	Shahabad ...	...	...	1	1	1	1	2	2
	Tirhoot	...	...	...	...	6	13	6	13
Bhaugulpore ...	Bhaugulpore ...	...	...	...	...	2	...	2	...
	Monghyr ...	3	...	2	3	9	22	14	25
Rajshahye ...	Rajshahye ...	...	..	1	1	...	...	1	1
	Moorshedabad ...	1	2	...	...	1	...	2	2
	Grand Total ...	...	...	...	...	...	...	147	157

PRESIDENCY DIVISION.

From C. C. STEVENS, Esq., *Officiating Magistrate of Nuddea, to the Commissioner of the Presidency Division,*—(*No.* 2572, *dated* 22*nd July* 1870). NUDDEA. C. C. Stevens, Esq.

Your No. 158, dated 22nd June 1870.

According to the request of the Cattle Plague Commission, I have caused reports to be sent in from all sub-divisions on the subject of cattle poisoning.

In four of the sub-divisions, *viz.*, the Sudder, Ranaghat, Chooadangah, and Bongong, no such offence has come before the authorities within the last twelve months, nor in any one is the crime reported to be prevalent. The Deputy Magistrate of Ranaghat alone speaks as to its existence as a matter of report. He says that two unsuccessful prosecutions have taken place during his experience, and that the moochees are suspected of the crime, which they are said to commit by spreading poison in plantain leaves.

Cattle poisoning in Meherpore.

From the fifth sub-division of Meherpore one case of poisoning is reported, in which the accused was punished. Not a single case came under the notice of the Police. The Assistant Magistrate asserts that, as a matter of fact, the crime is very common. In no other way can the sudden deaths of healthy cattle be accounted for. The moochees make a livelihood from poisoning, for they get the skins of the dead cattle, and the healthier the animal is the more valuable is its hide. Detection is hopeless; the poison is administered so safely by poisoned leaves. The Assistant Magistrate mentions a planter who successfully checked the mortality among his factory cattle by prohibiting the sale of the skins, which are said to increase or decrease *unnatural deaths among cattle,* according to the fluctuations of the hide market.

Effect of prohibiting sale of skins.

The Joint Magistrate of Kooshtea sends in a long and interesting report, which I have attached to this. He points out how a regular system and trade of cattle poisoning exists. His remarks on the means of prevention merit attention, though I cannot see how he can legally proceed against the agents and their instruments under Chapter XIX of the Code of Criminal Procedure. Special legislation is, I think, necessary to put a stop to this species of mischief.

The statistics of the Courts do not appear to show that the crime of cattle poisoning is greatly increasing.

From H. L. JOHNSON, Esq., *Joint Magistrate of Kooshtea, to the Magistrate of Nuddea,*— (*No.* 537, *dated* 29*th June* 1870). KOOSHTEA. H. L. Johnson, Esq.

Your No. 2294, dated 25th June 1870, covering correspondence on subject of cattle poisoning.

2. So far from cattle poisoning being unknown in this sub-division, it ranks as a trade.

Modus operandi.

3. The trade is worked as follows. The Calcutta hide merchants (one named Amir Khan does most business in these parts) establish agencies in the large bazaars for the purchase of skins. The agents advance money to the moochees and others, and the latter gradually work off the advances by bringing in skins. There are two classes of skins, the good and the bad; the former class comprises those of animals that have died an unnatural death by snake-bite, a surfeit of peas, from the effects of a storm or by poison; the latter comprises those of animals which have died a natural death by disease. Skins of the former class are worth from Re. 1-8 to Rs. 2; skins of the latter class from 8 annas to 12 annas.

4. The hide merchants' agents make no secret of the principles on which their trade is carried on. They know there is no law which can touch them.

5. The moochee, or other person, having taken his advance from the hide merchant's agent, proceeds to the Banya's shop in the same bazaar and purchases a supply of arsenic. This he makes up into boluses containing about a tolah of the poison wrapped in a piece of plantain leaf. He garnishes the dose with a handful of *job* or gum, or other attractive fodder.

6. He generally confines his operations to the night time, just dropping his dose into a cow-house among the fodder, or if he has set his heart on a particular skin, he will risk going inside and administering the dose with his own hand to the owner of it.

7. But at times, from long impunity, he will get over-bold, and attempt to carry on his nefarious practices in broad daylight; he is thus sometimes detected. Two cases of this kind occurred in Thanah Doulutpore last cold weather, which resulted in the conviction of five persons—all moochees.

8. Cattle poisoning is not only practised for gain; with arson it forms the *badmaish's* (habitual criminal) protection. If any one gives information against a *badmaish,* shortly afterwards either his cattle are poisoned or his house is burnt down.

Advances.

9. If only ordinary prudence is exercised, the trade of cattle poisoning may be carried on with perfect impunity. There is no law to prevent the agents giving advances, which are a direct bribe to the moochees. If Providence does not provide them with the necessary number of skins within the time stated, and the number is such that they cannot expect Providence

KOOSHTEA.
H. L. Johnson, Esq.

to make so liberal a provision, how are they to make up the amount. Again, the skin of a poisoned animal counts for two of animals which have died of disease;—what a saving of time and trouble to supply the former kind! There is no excuse for these advances. It is not necessary to keep the moochees in food while they are supplying skins. There is no period during which skins are not to be obtained. Moochees are not dependent on the skins they get for their subsistence. Whether they had advances or not they would carry such skins as they obtained to the best market. The only object of giving advances is to secure a certain number of skins, whatever the natural supply may be.

10. There is no law to prevent the Banyas selling arsenic. There is a custom that they shall not sell poisons unless in the presence of a *kobiraj* (native physician), but the custom is not recognised in our Courts, and is dying out.

11. It is impossible to prove the criminal intention necessary to make the agent and the Banya abettors.

Difficulties in detection.

12. Lastly, unless he is caught in the act (necessarily a very rare occurrence), it is impossible to convict the poisoner; for, in the first place, it is impossible to decide on the vague description of the symptoms given by native witnesses whether the animal died of poison or not. That the practitioner has not the wit to vary his poison, and that (such, as far as I am aware, is the fact) arsenic is invariably used, is a great help, but he would be a bold man, even if he were well acquainted with the subject, who would take upon himself, on the evidence of a native witness describing the symptoms, to say that an animal died of arsenic poisoning. It is impossible to get hold of the intestines. Curiously enough, cattle poisoning is an uncognizable offence, and the poisoned animal has been long digested by vultures and jackals before information is given to the Magistrate. Even were it a cognizable offence, and were orders issued to the Police to procure, whenever possible, the intestines and send them in for examination, I doubt if they would often be able to arrive on the spot in time to secure them. But even supposing it to be proved that the animal died of poison, as it might be even without an examination of the intestines, *e. g.*, by the fact that the vultures which ate those intestines had also died, it is very difficult to bring the fact to administration home to the guilty party.

Measures adopted.

13. The only legal way of putting a stop to cattle poisoning is to proceed under Chapter XX, Code of Criminal Procedure. From an inspection of the agent's books it is easy to see who supplies an unusual number of skins of the first class. If the supplying party cannot, when called upon, account for the death of the animals from which he took the skins by the ordinary accidents of bovine life, and if at the same time he is by repute a cattle poisoner, there is enough evidence to justify a conviction. I find an inspection of books and an order filing a list of suspected poisoners at the Thannah, directing the Police to keep the persons named under their surveillance, useful as a deterrent measure; it is perhaps hardly legal. I have also tried to persuade zemindars not to let out the right of taking skins; even to go so far as to forbid any skins to be taken in their villages. This measure, though very popular among the ryots, savours of oppression.

14. My acquaintance with this district is not such as to enable me to state on my own knowledge whether this crime has within the last few years been on the increase. My informants say that its existence depends on the establishment of these hide merchants' agencies.

Recommendation.

15. From the remarks I have made you will observe that I am prepared to advocate—

(*a*). A law forbidding advances being made for hides.
(*b*). A law regulating the sale of poisons.
(*c*). The amendment of Schedule, Code of Criminal Procedure, Sections 428-429, column 3, *for* "shall not" *read* "may."

16. I enclose a list of cases which have come into Court lately. As cases of cattle poisoning are uncognizable, they are not reported by the Police.

List of cattle poisoning cases which have lately come into this Court.

No. of the cases.	Name of complainant.	Name of defendant.	Date of sentence.	Abstract of sentence.	Charge.	Remarks.
20 of 1870	Nufur Khan of Nunaghur.	Madan Moochee, Kali Churn Moochee, Gopaul Dutta.	9th Feb. 1870	Two years' rigorous imprisonment each; the latter also fined Rs. 100, in default 6 months' further imprisonment.	429, 109, 511, I.P.C.	
17 of 1870	Mozahur Falye, Sheik, Chowkeedar.	Holodhur Moochee, SaduMoochee, Kristo Lall Moochee, Issur Moochee.	1st Mar. 1870	Each rigorous imprisonment of 2 years.	429, 109, &511, I.P.C.	
16 of 1870	Motee Duvan of Bahadurpur.	Modhoo Mundle, Mungal Sheik.	17th June1870	Discharged under Section 250.	429, I.P.C.	

JESSORE.
A. C. Wright, Esq.

Judgment delivered in a case of cattle poisoning tried before A. C. WRIGHT, Esq., *Deputy Magistrate of Jenidah, dated 24th July* 1867.

Khoda Bux ... ... *Complainant,*

versus

Prelad Chamar ... ... *Defendant.*

The prisoner was charged with poisoning the plaintiff's cow.

JUDGMENT.

The charge is fully established against the defendant Prelad Chamar. He was caught in the act. The defence set up by him is a most lame one and unworthy of belief. It is not likely plaintiff would kill his own bullock merely for the sake of bringing this action against defendant, with whom he has no quarrel whatever, and, in fact, whom he does not know. The defendant seems to be a confirmed cattle poisoner. He has already been before this Court for the same crime, and has undergone 2 years' rigorous imprisonment for it. I think him deserving of severer punishment than it is in my power to inflict, and I therefore commit him to stand his trial before the Sessions Court on the charge preferred against him.

A habitual poisoner.

Jenidah Magistracy. Case No. 89, *June* 1869.

Reply of Chunder Chamar. Not guilty. We have quarrelled about bamboos with plaintiff and Panja Alli, and therefore he has got up this charge. I have never before been in jail. I can cite witnesses.

Reply of Premchand Chamar. Not guilty; similar to the above. Does not know from whence the poison was got. It was not found with him (defendant).

JUDGMENT.

The charge is fully established against the defendants. They were caught in the act, and the stuff with which they were going to poison the cattle, and which was found on their persons, has been analyzed by the Assistant Chemical Examiner to Government, and found to consist chiefly of arsenic. This crime, I am afraid, is very prevalent in this district, but very few cases come to light, as the chamars manage to administer the poison to cattle in a way that it is not easy always to catch them. They merely pass through a field with herds of cattle in it, and drop a few boluses of their poison wrapped up in plantain leaf, and some of the cattle are certain to pick them up and eat them. The moochees do this to get the hides of the cattle. As soon as a cow dies the carcass is thrown out by the owner, and the moochees are always ready to take the hide, which they get for nothing. The fact of their getting the hides without payment is an incentive to them to commit the crime of cattle poisoning, as they sell the hides afterwards for a good sum. This crime requires to be strictly dealt with, and an example or two will, I am sure, do a great deal of good towards stopping it. I convict and sentence the defendants, under Sections 429 and 571, to rigorous imprisonment for two years each. The poison (arsenic) will be destroyed.

The practice described.

A. C. WRIGHT,
Deputy Magistrate, Jenidah.

2nd July 1869.

Report on Cattle Poisoning, by H. FARRELL, Esq., V. S., *on special duty, dated 12th September* 1869

H. Farrell, Esq., V. S.

PARA. 2. My attention was first drawn to this subject in May last, when visiting the village of Suttrajeetpoor in the Magoora Sub-division. In this and the surrounding villages the disease among the cattle was raging to a great extent, and I noticed that several of the cases under treatment showed symptoms different from those of cattle disease, being more acute, with severe abdominal pains, and death taking place in a very short space of time, in some cases within 12 hours. Between the 23rd, 24th, and 25th May I made 73 *post-mortem* examinations of cattle that died; of these 57 were deaths from *gootee*, and the remaining 16 confirmed me in my suspicions, from the lesions I saw in the 3rd and 4th stomachs and intestines, that they had been poisoned. I was unable to tell at that time what was given, but to obtain still further proof that poison had been used, I administered a small portion of the contents of the 3rd stomach to a pariah dog, and of the 4th and intestines to a goat. The former died 37 hours after, and the goat within 7 hours. Since then I have learnt from analysis that the substance used is "white arsenic." I have collected the contents of the stomachs of 17 other cases from different parts of the district, and have submitted the same to the Chemical Examiner to Government for analysis. I will forward his report on receipt. *

Observations.

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* Letter No. 450, dated the 6th August 1870, from the Additional Chemical Examiner to Government, to the President of the Cattle Plague Commission.

With reference to your letter No. 424 of the 5th instant, I have the honor to inform you that neither during September nor October last, nor at any other period subsequently, did we receive from Mr. Farrell, V. S., the 17 stomachs of cattle alluded to.

A similar inquiry to this was made in October last by the Officiating Magistrate of Jessore in his letter No. 569 G.

JESSORE.
H. Farrell, Esq., V. S.
Prevalence.

3. This poisoning of cattle, I regret to say, is very largely practised all over the district, and is not confined to one particular place. The Jenidah chamars have the reputation of being adepts at the trade, and were the first to introduce it into the district. Several of these men are now in jail for poisoning cattle, and the following is a case in point as proof of their character. A chamar was sentenced by Mr. Wright, Deputy Magistrate, Jenidah, to 2 years' imprisonment for poisoning cattle. At the end of this period, within a fortnight after his liberation, he was again caught in the act and sentenced to 5 years' imprisonment.

Agents.

4. The chamars are in some parts backed up by Mussulmans who deal in horns and hoofs, and practise poisoning for the sake of the hides. They go about it in a very systematic way, as they work under the cloak of the cattle disease. The frequent outbreaks of late years have been turned to great account by them; chamars from other parts of the country where there is no disease appear and set to work, collecting the hides and settling down in places where they were never known before. I may here state that the symptoms of poisoning by arsenic resemble very much those of *gootee*; and to the ignorant eye very little difference will be perceived. We have the abdominal pains sometimes present in *gootee*; frothing at the mouth, in poisoning resembles the dropping of the *saliva* in *gootee*; acute diarrhœa and dysentery begin early in poisoning, but appear in the second and later stages of *gootee*. The spasmodic twitchings of the muscles in the latter may be confused with the tetanic spasms of arsenical poisoning. These and other symptoms are quite sufficient to mislead the poor ryot and make him believe, which he does implicitly, that *gootee* or *bussunto* was the cause of death. No suspicion ever rests on the chamars, and they are allowed to work as they like. I have known a great number of chamars, and especially those that come from other districts, turn cattle doctors and pretend to cure the disease with herbs and incantations. Of course this is done with an object on their part, and they invariably commence destroying all the cattle they can get near. Two cases of this kind came under my notice in the Magoora Sub-division, but I was unable to get hold of the chamars.

Poison.

5. The arsenic is made up in a pill (about ½ an inch in length) with flour rolled up in plantain leaf and dipped in treacle; several of them are thrown among a herd of cattle out grazing or sometimes into the mangers. Each pill contains about 4 drachms of arsenic. Women and boys are mostly employed in disposing of these pills among cattle.

Hide trade.

6. The great quantity of hides that have been sent to the Calcutta market, and especially the kind termed "*moordari*" of late years, is to be traced to the frequent outbreaks of the cattle disease in Lower Bengal. It is but the short space of 5 years that has brought this about. All diseased carcasses are allowed to be skinned, removed, and sold in the markets. It is a well known fact that the villages around *hâts*, where the hides are taken for sale, always suffered first and more severely on the outbreak of the disease. The same with Calcutta. The disease hangs about the places and villages nearly all the year round in the neighbourhood of a hide depôt. The prices given for hides in the Calcutta market have also increased greatly of late years; a few years back hides sold in the district from 8 to 9 annas each; now the chamars can sell them at their own doors to brokers for Rs. 30 the score, or at Re. 1-8 each. It can be thus imagined what a paying trade it is for the chamar.

Advances.

7. In different parts of the district hide brokers have settled down and give large advances to chamars on a bond, which is paid back in skins. Most of these men are from Calcutta, and the others from Dacca. There are, however, three men that do most business—Colum Biswas Hamdaw, village Purrumpore, near Porahattee, Boyconto and Woma Churn, village Phodee, near Nowhatta. The amount distributed in advances in the district by these three men is given below for 1869:—

Colum Biswas	...	...	...	...	Rs. 3,900
Boyconto	...	...	...	...	,, 2,750
Woma Churn	...	...	...	...	,, 2,100

A few names of the chamars and the amount of advances received by them will give an idea of the trade that is carried on, and the large sums given to them. The native character is too well known to need any remark, that the chamars, to meet the bond, must employ all manner of means to obtain the hides rather than have to pay it back in money; besides, not one in fifty has an acre of land that he ploughs, and his only means of livelihood consists in selling hides and doing a little weaving now and then. I give the names of a few.

Mohesh Repie and Mrittonjoy	...	Village Phoolbaree	...	...	Rs.	1,300
Comba ...	...	,, Benudpoor	...	...	,,	730
Bunwarea	...	Singree ...	...	...	,,	90
Batooram	...	Jenidah ...	...	...	,,	850
Goberdhun	...	Chooadanga	...	...	,,	400
Gogun ...	...	Magoorah	...	...	,,	100
Kristo ...	...	Doomree ...	...	...	,,	400
Mothoor and Sitaram	...	Goalna ...	...	...	,,	530

Organization.

8. The chamars work under a head man of their own caste; this man has from 10 to 20 houses under him; he receives the advances from the broker, and employs the others, and also chamars that may come from other districts, in collecting the hides, for which he advances small sums. This head man rents from the zemindar a certain number of villages, which gives

him a claim over all the cattle that die in these villages; for this he pays either so much a head or a *jumma* known as *bagaria, sasoon* or *motioffee jumma;* the first word is more often used, as it means rent, from the word *Bagar,* a piece of land near every village where carcasses are thrown. The chamar has to pay very heavily for this, in some cases as much as Rs. 40 a year. Every zemindar, whether Hindoo, European, or Mussulman, takes this *jumma* in one shape or another. Some Hindoos, from religious motives, accept *nuzzur* instead, or farm it out to Mussulmans. Every village has its *bagar,* and every *bagar* is rented either to a head chamar of another village or to one chamar. Suits for the recovery of the *jumma* are instituted, as the records of the Courts will show; so it must be a recognized custom.

JESSORE. H. Farrell, Esq., V. S.

9. I have put these facts together in the hope that, by drawing attention to the subject, some means will be discovered of checking, I may say, this wholesale poisoning of cattle. The order for the burial of the cattle and scoring of the hides I am happy to say is being strictly enforced throughout the district, and has had a most beneficial effect both on the cattle and the chamars.

From E. J. BARTON, Esq., *Officiating Magistrate of Jessore, to the Commissioner of the Presidency Division,*—(*No.* 137 *G., dated* 18*th September* 1869). E. J. Barton, Esq.

* * * * * *

PARA. 2.—That cattle are poisoned in this district is true. But the same may be said of all Bengal. At the same time I think that Mr. Farrell represents this crime to be more prevalent than it really is. I am induced to form this opinion regarding the offence in this district, because, if it were so frequent as Mr. Farrell represents, it is almost certain that more people would be prosecuted and punished for it than now are. If the poisoning had assumed the dimensions which Mr. Farrell leads us to infer it has, it is certain the people would keep a most vigilant eye upon their cattle and the movements of the moochees or chamars, and it is highly probable that they would detect them in at least a fair proportion of their acts.

3. The majority of the people also are not so ignorant as to make a rule of generally mistaking poisoning by arsenic with death by disease. With one fact they are doubtless familiar, *viz.,* that death by arsenic ensues much more rapidly and suddenly than death by disease; the latter takes days to kill an animal, while arsenic requires only a few hours.

4. A search through the criminal records of this office since 1863 does not show that cattle poisoning or even complaints of it are very frequent.

5. The District Superintendent and I caused an Inspector of Police with a body of Constables to make a sudden descent upon and search the houses of the moochees in some of the villages in the sub-division of Jenidah, to which Mr. Farrell refers, and no arsenic was found in any one of them. This was done in the beginning of this month, and immediately after I had heard Mr. Farrell express his suspicions that the moochees were administering poison to cattle.

6. Mr. Farrell's report of leasing out the *bagar sasoon* of a village is correct, but only with reference to a limited area within the district. In very many parts such a lease or *jumma* is unknown. I am not prepared to say that giving out of such a lease encourages the moochees to poison cattle or destroy them by other nefarious means. The lessee is generally an inhabitant of the village or of an adjacent village, all of whose inhabitants know his movements. If he practised the poisoning of his neighbour's cattle on a large scale, it is certain he would be speedily detected and punished.

7. Mr. Farrell has given a correct description of the way in which cattle are poisoned. That description is applicable not only to this, but I believe to all other districts in India. The mode is the same everywhere, at least wherever I have been.

8. The rise in the price of hides to which Mr. Farrell refers has been caused by the export trade in that article having recently largely increased. I do not, however, think that the rise has been so high as to inflame the avarice of the individual moochee to such a degree that, for the sake of a few annas, he would devote himself to the commission of an offence for which he is liable to a severe punishment.

Outline of cases of suspected cattle poisoners tried in the jurisdiction of the 24-*Pergunnahs during* 1869-70. 24-PERGUNNAHS

CASE NO. 380 OF 1869.

Tried by MR. VERNER, *Joint Magistrate, Alipore, on the* 25*th December* 1869. ALIPORE

Mothoor Ghose ... ... *Complainant,* Mr. Verner

versus

1, Premchand Moochee ... } *Defendants.*
2, Gobordhun Moochee ... }

In this case 3 witnesses deposed that they actually saw the accused throw down the poison near the cow, and there was besides the evidence of another witness to whom the

24-PERGUNNAHS. ALIPORE. Mr. Verner.

accused had admitted their guilt, but the Joint Magistrate thought that the circumstances of the case were such as justified his suspecting the veracity of the witnesses and the truth of the charge, since at that time cattle disease was prevailing very extensively in many parts of this district, and the Joint Magistrate believed that the natives being quite unable to account for the murrain that killed their cattle, were always ready to ascribe it to the moochees. He discredited the whole evidence and dismissed the charge on the 25th December 1869.

CASE, No. 95 OF 1869.

ALIPORE. Baboo Taruck Nauth Mullick.

Tried by BABOO TARUCK NAUTH MULLICK, *Deputy Magistrate of Alipore, on the* 30*th December* 1869.

Ramcoomar Mundle ... ... *Complainant,*

versus

1, Shamachurn Moochee ... ... } *Defendants.*
2, Dineea Moochee ... ... }

The accused were charged with attempting to poison the complainant's cow which was tied outside his cow-shed on an open space. Neither the complainant nor his witnesses, by whom he was informed that the accused Shamachurn had put some poison into the mouth of the cow with a plantain leaf, saw the accused in the act. A witness named Bindabun Joogee deposed that one Assur Ali had told him that he had found the accused in the act of putting poison into the mouth of one of the complainant's cows; but the evidence of this Assur Ali (the only eye-witness) was so full of improbabilities that the Deputy Magistrate did not place reliance on it, and discharged the accused on the 30th December 1869.

CASE NO. 5 OF 1870.

ALIPORE. Baboo Cally Churn Ghose.

Tried by BABOO CALLY CHURN GHOSE, *Deputy Magistrate of Alipore, on the* 16*th March* 1870.

Radha Nauth Ghose ... ... *Complainant,*

versus

1, Nuba Moochee ... ... } *Defendants.*
2, Prohlad Moochee ... ... }

On or about the 2nd of March last the complainant received information from Radha Nauth Bagdhee and Bhogoban Dass that the accused had poisoned his bullock which had been grazing on a piece of fallow land not far from his house. When brought home in the afternoon, the animal was found to be salivating profusely and shuddering, and after passing a copious loose stool it died. Both the above-mentioned witnesses did not know the accused before. Radha Nauth said he was going towards the south, and observed from the distance of a *russee* a man sitting with his face towards the west and putting something into the mouth of the bullock which had its face towards the north. He also saw at the same time another person standing on the road with his face towards the south. He enquired what they had given to the bullock, but they without looking towards him, or even speaking with him, ran away towards the east. Next morning when he went to complainant's house he saw the prisoners under arrest, and recognized Nuba by his long, and Prohlad by his short, hair. He also added that when the accused were running away he could see their faces.

The other witness Bhogoban contradicted Radha Nauth materially. He deposed that the bullock was grazing with its face towards the east, and one of the accused was giving it to eat something with his face towards the south, whereas the directions as given by Radha Nauth are north and west.

There were other serious inconsistencies and improbabilities in their evidence, and the Deputy Magistrate did not at all deem it sufficient to justify a conviction, and he accordingly discharged both the accused on the 16th March last.

CASE NO. 13 OF 1870.

DUM-DUM.

Tried by the Cantonment Magistrate of Dum-Dum on the 4*th April* 1870.

Queen

versus

Baroo and four others.

Amongst 4 head of cattle which the complainant had tied to graze in the Anurpore jheel on the morning of the 2nd February last, he missed one on his return there at noon.

24-PERGUNNAHS. DUM-DUM.

Search being made, he found the carcass of the bullock in a drain bordering upon the cantonment, and the male defendants in the act of cutting up its flesh, with which the female defendants were filling up baskets. The complainant immediately retreated and came back to the spot with some of his neighbours, on seeing whom all the defendants ran away except Baroo, who was then and there captured by the complainant and taken to the Thannah with the head, skin, and a portion of the meat of the slaughtered bullock.

The witnesses, who were all neighbours of the complainant, identified the carcass of the animal as that of the complainant's bullock by its color and by the fact of one of its horns having been broken; they also deposed to having seen the animal alive in the morning, when nothing was the matter with it.

The Cantonment Magistrate fully believed the testimony of the witnesses for the prosecution, and as cattle stealing and poisoning them by moochees are becoming extensive crimes in some parts of this district, he deemed it just to make an example of these miscreants, and accordingly convicted them of theft under Section 379 of the Indian Penal Code, and sentenced the accused each to one year's rigorous imprisonment on the 4th April last.

CASE NO. 83 OF 1870.

DUM-DUM.

Hullodhur Dome ... ... *Complainant,*

versus

Bungshee Moochee ... ... *Defendant.*

This case was reported by the Police in B. form. On the 9th January last the accused Bungshee Moochee went for the first time to the complainant's house 3 or 4 times, and when he last visited the house on that occasion, at about 6 P. M., he saw the complainant tie up his cow in his working-shed outside the house. Next morning Hullodhur Dome not finding the cow in the shed went out to search for it; he subsequently found its carcass near the wall of the house of one Gaffoor Khan, and that the whole of it had been skinned except the head, by which he identified the cow as his. He gave information of the circumstance at the Thannah, suspecting Bungshee Moochee of the theft and of killing his cow.

The Police investigated the case, but in the absence of any eye-witness to the fact, no case could be made out against the suspected person. The Magistrate ordered that the Police Inspector should exert his best to trace the offender and bring him to justice, as there were three or four cases of that kind in the sub-division.

ALIPORE.

From the Inspector of Police, Busseerhaut, to the District Superintendent of Police, 24-Pergunnahs, Alipore,—(dated 2nd September 1870).

With reference to memorandum No. 4853, dated 21st ultimo, I beg to forward a copy of the judgment which shows the case clearly.

Before the detection of this case in July last, a sort of cattle plague was supposed to have existed at Poorah and the neighbouring villages, to which about 100 cattle fell victims. Cattle were let loose to graze in the field where they had died suddenly: the general symptoms were, 1st, lying stretched on the ground and struggling; 2nd, discharging froth from the mouth and the nose; 3rd, swelling of the belly and discharging watery dung. The plague has at once abated after the arrest of the prisoner Neemy Mooehee in the act of his attempting to poison two oxen that were grazing in the field.

Thirty-six grains of arsenic (সেঁকো বিষ) were folded in a piece of plantain leaf and put before the oxen, which is enough to kill six bullocks.

Baboo Dwarka Nauth Dey.

Judgment delivered in a case of cattle poisoning tried before BABOO DWARKA NAUTH DEY, *Deputy Magistrate, on the 18th August* 1870.

CHARGE.—*Attempt to commit mischief by poisoning two oxen.*

Kantichunder Chatterjee ... ... *Complainant,*

versus

Neemy Moochee ... ... *Defendant.*

Prevalence of cattle poisoning.

The circumstances connected with this case are briefly these. A large number of cows and bullocks have, during the past few months, been killed by poisoning in Poorah and the surrounding villages. The moochees who sell the hides are supposed to throw poison near the places where the cows and bullocks graze. Complainant lost several of his cows, most likely in this way; he was therefore wide awake and did not allow his two remaining oxen to graze unobserved; whenever his servant went to take his meals he himself watched his oxen.

24-Pergunnahs. Alipore.

On the 21st July last the oxen were grazing, and complainant was sitting at a short distance away in the house of one of his tenants. Some men were working in an adjoining field who saw defendant throw something near the oxen; they at once shouted to the complainant that defendant threw something. On this complainant came out at once, and at his request the men who were working near caught hold of defendant, who attempted to run away. It was found that some white substance folded within a plantain leaf was thrown. I had the white substance examined by the Medical Officer here, who deposed that it is arsenic, a very strong poison, and that death would occur almost immediately if a cow or bullock were to swallow it.

I had several witnesses for the prosecution examined very carefully, and put their depositions to the test of a strict cross-examination, and there is no doubt left in my mind that prisoner is the man who threw poison near the oxen and attempted to kill them.

Defendant has no ostensible means of getting a livelihood; he says he does the work of a laborer, but he would not say in which village. The witnesses that he adduced in his defence do not in the least support his plea; they in fact know nothing about his defence. He says that he was to get some pice from one of the laborers who arrested him, and because he insisted on payment, this false case is instituted.

This plea is not at all substantiated by any evidence, and I think it is entirely groundless. Complainant seems to be a most respectable man, and it is not at all likely that he should institute a false case against the prisoner because he had insisted on payment of his due from one of the men who arrested him.

Looking carefully into all the circumstances of the case, I have no hesitation in convicting defendant of the offence specified in the charge, *viz.*, that defendant Neemy Moochee did attempt to cause mischief to complainant by attempting to poison his oxen; under Sections 429 and 511 of the Penal Code the Court sentences the prisoner Neemy Moochee to undergo rigorous imprisonment for 2 years and to pay a fine of Rs. 20, in default of payment defendant to be further imprisoned for 6 months.

Precis of cattle poisoning cases within the 24-Pergunnahs District reported as true during the last 12 months,—dated 10th September 1870.

SUBURBAN POLICE COURT AT ALIPORE.

Name of complainant, Buddun Bhoyyoh; *date of complaint,* 24th July; *facts stated by complainant,*—on oath states that about 6 or 7 days ago at noon, while he was working in a paddy field with three others, *viz.*, Koylash, Joteram, and Babooram, his attention was drawn by the first named individual to a man offering some leaves to his cow which was grazing at a distance of 2 or 3 *russees* from where they were working, holding with one hand the rope by which she was tethered, and with the other hand presenting the leaves. He immediately ran up to the spot, followed by his fellow workmen, saw the accused Bhorosee Chamar throw down the leaf into a drain full of water and run away, and he was pursued and caught by the complainant. The leaf was picked up, and appeared to be smeared with some white substance, and the accused Bhorosee, who begged to be pardoned, was then made over to the nearest Police Station.

Brief analysis of the evidence of witnesses.—Koylash Patter says, on Sunday last at noon while he was working in a paddy field with Buddun and 2 others, he saw the accused Bhorosee Chamar in the act of holding the rope by which the complainant's cow, which was grazing at a *russee* off, was tied, and presenting some leaves before her mouth. He directed Buddun's attention to the circumstance, and they all ran up and captured the accused and took him to the Pharee.

Joteram Bhoozzol confirmed the statements of the above witness, and narrated the same facts almost exactly in the same words.

Final order.—Sentenced to 8 months' rigorous imprisonment.

Baraset.

BARASET SUB-DIVISION.

Name of complainant, Bhogobun Ghose; *date of complaint,* 9th August 1870; *facts stated by complainants,*—states that he saw the accused Pitamber Moochee entering his cow-shed at dawn with a piece of plantain leaf in his hand, and a portion of the leaf he found on the ground.

Found a cow and a bullock had sickened; asked the accused why he was there, and why he replied that he had gone to take fire. The cattle died shortly after.

Witness Banshinath Ghose states that he saw the accused enter the cow-shed with a piece of plantain leaf in his hand.

Bonomalee Ghose states that he was present when the accused and the complainant were quarrelling with each other just after the occurrence. He saw complainant bring out plantain leaves from the cow-shed, which he said had been given to his cattle.

24-PERGUNNAHS

Final order,—The accused was convicted under Section 429 of the Indian Penal Code, and sentenced to 6 months' rigorous imprisonment and a fine of Rs. 30, or in default of payment thereof to undergo similar imprisonment for another 3 months. On appeal, the Sessions Judge reversed the order, as he did not believe that accused would during daylight enter into complainant's cow-shed, when, as chowkeedar of the village, he could without being detected do it at night.

BARRIPORE.

Precis of a case of cattle poisoning tried and disposed of by the Sub-divisional Officer of Barripore in August 1870.

Name of complainant, Nilcomal Roy of Padda Pukar; *date of complaint*, 23rd April 1870; *facts stated by him*,—the complainant stated on the 28th April 1870, in this Court, that 8 days past Ramchurn Roy, servant of the Moonsiff Baboo, called and told him that a person having thrown a bundle containing poison near the face of his (complainant's) cow, went away; that on his going to the spot he saw his cow grazing on the brim of a tank where witnesses Anund Bagdini, Horo Bagdi, and Ghumar Bagdi were making a noise; that they told him that the person who threw the bundle containing the poison was going on, and that he should just go and catch hold of him; that he, accompanied by Horo Bagdi, went and caught hold of and brought the prisoner, *Balak Moochee*, who was running off; that the prisoner denied having thrown the bundle, but the witnesses Horo Mohun and others said that he, *i. e.*, the prisoner, was the person who did throw the poison; that he did not know the prisoner before; and that the price of his cow is from Rs. 10 to 12. The complainant saw the bundle, produced in Court, and identified it to be the same bundle. On the 29th April 1870 the plaintiff was again present and sworn, stated that the knife (pointing to the knife produced in Court) was found in the waist of the prisoner, and that he thought that the prisoner with an intention to obtain the hide of his cow threw the poison before it.

Witness Horo Bagdi stated that he saw the prisoner throwing the bundle containing plantain and arhar leaves and white powders before the cow of the complainant. The witness identified the leaves, powders, and the prisoner.

Witness Anund Bagdini stated the same as witness Horo Bagdi, and identified the leaves, powders, and the prisoner.

Witness Jhumar Sardar stated the same as the above two witnesses, and identified the leaves, the powders, the prisoner, and the knife found in the prisoner's waist.

Final order.—The prisoner was sentenced on the 29th August 1870 to rigorous imprisonment for 3 months.

ORISSA DIVISION.

CUTTACK.

W. Macpherson, Esq.

From W. MACPHERSON, Esq., *Magistrate of Cuttack, to the President, Cattle Plague Commission*,— (*No.* 1144, *dated* 16*th August* 1870).

With reference to your No. 356, dated 10th June, to Secretary, Government of Bengal, requesting that a report might be submitted by district officers regarding the extent to which cattle poisoning prevails, I have the honor to make the following remarks.

2. There is nothing in the records to show that cattle poisoning has been on the increase during the last few years. The complaints of such offences are few. I fear, however, that the offence exists to a greater extent than the number of charges preferred would lead one to suspect. Such charges are in the majority of cases very difficult to prove. They are not cognizable by the Police, who, without the orders of a Magistrate directing them to make enquiry, refuse to take cognizance of them; the complaint must therefore be laid before the nearest Magistrate having jurisdiction; this involves time, trouble, and expense, with a great risk of obtaining no satisfaction; such cases, in my opinion, require to be taken up *at once*.

Prevalence.

Difficulties.

3. During the year, from June 1869 to June 1870, in this district only 3 cases of cattle poisoning were established, and the accused punished; another case was proved in April 1869; 3 other charges were preferred, but not established.

Cases.

4. I annex copies of the judgments in all these established cases; these show sufficiently clearly the circumstances under which and the motive with which the crime was committed. It will be observed that in all the cases the persons convicted were of the class who deal in hides, flaying the carcasses of deceased cattle.

5. The very existence of such cases, even in a limited degree, shows, I think, that the practice is more general than is supposed. Men who commit offences of this kind once with impunity would be likely to repeat them, especially as detection is difficult and rare.

CUTTACK.
W. Macpherson, Esq.

6. At the same time I must state that, from enquiries made through the Police, it does not appear that there is any suspicion among the people generally of any known or recognized class of poisoners, nor do the Police know of any such.

7. I think it would be an improvement, and would tend to check the crime, if poisoning cases were made cognizable by the Police.

Judgment delivered in a case of Cattle Poisoning tried before J. F. HARRISON, Esq., *Deputy Magistrate, dated* 30*th April* 1870.

Moolee Naik .. .. *Complainant,*

versus

Kassee Samul ... ... *Defendant.*

This is a case of poisoning a cow brought against the defendant Kassee Samul. It appears he is in the habit of killing cows for the sake of their skins, which he sells to the butcher. The plaintiff states that he was sitting under a tree with two others while his cow was feeding on the river side, and while they were talking the defendant went up to the cow, which was some 300 *háths* distance, and gave it some grass to eat. The plaintiff suspected that something was up, owing to the suspicion attached to defendant, and so went up to the cow with his two companions. They found the cow eating some grass which was lying on the ground. The defendant had moved a short distance off. The plaintiff asked defendant what he had given his cow to eat, and he denied having given it anything. Just then the cow began to tremble, and defendant seeing this ran off, followed by plaintiff and his two friends. The defendant ran into a *tari* shop and they caught him, and from the evidence of the plaintiff and his two witnesses they told Sheikh Bodoo, a Mussulman, who was present, to catch defendant, but the man Bodoo himself denies having actually caught defendant, but merely told him to remain where he was; they then went for the Chowkeedar Bhoggoo, and then took defendant off to the zemindar, who told them to take defendant to the Thannah: on the road to the Thannah the Chowkeedar asked plaintiff if the cow was dead. He did not know, so went with Nagoora Das to the spot where they had left the cow some 2 hours before, and they found it quite dead; they then went over to the Thannah, and the Police referred him to this Court, as the offence is not cognizable. I consider the evidence clearly proves defendant's guilt, and I direct that he be punished with rigorous imprisonment for six months, and to a fine of ten rupees, which will be given to plaintiff, under Section 44, Code of Criminal Procedure.

Judgment delivered by W. C. TAYLOR, Esq., *Deputy Magistrate, dated* 21*st December* 1869.

Bhaghut Patter ... ... *Complainant,*

versus

Juggoo Mullick ... ... *Defendant.*

Defendant, Juggoo Mullick, is charged with having poisoned and killed Bhaghut Patter's cow; the poison was administered on Sunday, the 10th Kartick, and the cow died next day. The evidence against Juggoo Mullick is clear, and he has failed to clear himself, and the witnesses on his behalf show cause for defendant, who is chowkeedar of the village, having a spite against the prosecutor. Defendant is a Pan, a class well known to poison cattle, and his cousin, Mohan Mullick, was convicted of a similar offence about 18 months ago. The second defendant, Ghanee Mullick, is charged with having stood outside whilst first defendant entered the cow-house and administered poison in some gram to the cow. There seems to be some doubt of the identity of Ghanee Mullick, and I will give him the benefit of the doubt, but of Juggoo Mullick's guilt I have no doubt. The complainant, I must mention, wished to withdraw the case, but this was not permitted.

Juggoo Mullick will be convicted under Section 429, Indian Penal Code; Ghanee Mullick will be acquitted.

Finding and Sentence.

The Court finds that Juggoo Mullick is guilty of the offence specified in the charge, *viz.*, that he has committed mischief by poisoning a cow, and has thereby committed an offence punishable under Section 429 of the Indian Penal Code. And the Court directs that the said Juggoo Mullick be rigorously imprisoned for one year.

The Court finds that Ghanee Mullick is not guilty of the offence specified in the charge, and directs that he be discharged.

Judgment delivered by T. KIRKWOOD, Esq., *Offg. Joint Magistrate, dated 29th April* 1869.

Kundroo Sahoo ... ... *Complainant,*

versus

Bhajun Mullick and Sheikh Panchoo ... ... *Defendants.*

The accused has, after having been duly cautioned, made a full admission of his own guilt. The only other evidence recorded is that of the complainant. There being no reason to doubt the correctness of the statement made by the accused, at least in as far as it inculpates himself, it appears unnecessary to take further evidence.

Accused admits having poisoned the animal, a cow; he admits having obtained the poison from a man whom he knew to habitually obtain hides by thus poisoning animals; he admits having obtained not only sufficient poison from that man to effect the death of one cow, but amply sufficient to effect the death of four; he admits having taken the hide of the dead animal, having made it over to Sheikh Panchoo, the man from whom, he states, he received the poison, and he admits having received 4 annas as remuneration for his share in the transaction.

I believe the statement of the witness that the accused is without any means of livelihood, except the sale of hides, and this case affords an amount of suspicion amounting to certainty that these hides were frequently obtained in the nefarious way herein instanced.

I believe this sort of crime to be very common in this part of country, and I think it is one that should be very severely dealt with.

Finding and Sentence.

The Court finds that Bhajun Mullick is guilty of the offence specified in the charge, *viz.*, that he has committed mischief by poisoning a cow, and has thereby committed an offence punishable under Section 429 of the Indian Penal Code. And the Court directs that the said Bhajun Mullick undergo rigorous imprisonment for a term of two years.

Judgment delivered by BABOO KALINATH BOSE, *Deputy Magistrate, dated 15th September* 1869.

Mussamat Nuhta Bai ... ... *Complainant,*

versus

Mohun Dullai and Dookai Dullai ... ... *Defendants.*

It has been very clearly and satisfactorily proved by the evidence of the prosecutrix and her witnesses that the accused Mohun Dullai poisoned a cow belonging to her, and that the cow died from the effects of the poison administered by him. The cow was grazing in the compound of the prosecutrix, and she as well as her witness Kanye Bearer saw Mohun catching hold of the cow's tail and driving in something. The other witness, Gopal Das, was called by the prosecutrix, and went to the place just when the defendant let the tail drop from his hand. Both the witnesses depose having seen the mark of some pointed instrument having been driven into the body of the cow, which died the next morning.

The evidence against defendant Dookai Dullai is only presumptive, but very strong. The other defendant is his son, and he was close by the place, and ran away with him no sooner the prosecutrix made a noise and men came running from different sides. The Police, when investigating the case, found in his house some poison, most likely arsenic, and the defendant admits that it was so found by the Police. The presence of Dookai Dullai at a very little distance from the place where his son, a boy of about fourteen, was, and his possession of the poison evidently shows that the boy committed the offence at the instigation of his father Dookai. The defendants are Mohorias by caste, who deal in hides, and it is the custom in this country that no sooner a cow dies, the owner of it throws it away, and a Mohoria, or mehter, takes away the hide without paying for the same. Hence it is that the defendants poisoned the cow with the intention of getting the skin when it was dead. The defendants admit their presence close by the house of the prosecutrix at the time when she states the cow was poisoned, but plead themselves not guilty, though they decline to adduce any evidence in their defence. The Court therefore convicts them of the charges made against them.

Finding and Sentence.

The Court finds that Mohun Dullai committed mischief by poisoning and killing a cow belonging to Nuhta Bai, and has thereby committed an offence punishable under

CUTTACK. W. Macpherson, Esq.

Section 428 of the Indian Penal Code; and directs that the said Mohun Dullai be sentenced to six months' rigorous imprisonment and to a fine of Rs. 10, and in default of payment of fine to one month's further imprisonment of the same description.

DACCA DIVISION.

MYMENSING. F. B. Simson, Esq.

From F. B. SIMSON, Esq., *Officiating Commissioner of the Dacca Division, to the Secretary to the Government of Bengal,*—(*No.* 235, *dated 9th November* 1868).

I have the honor to inform you that a system of organized cattle poisoning by moochees, for the sake of the skins, has been discovered at Mymensing, the criminals taking advantage of the reports of the deadly epidemic disease which has lately prevailed among cattle, making this a cloak for their crime.

2. The inhabitants of certain villages began to suspect the truth, and after careful watching found out the procedure resorted to, and complained to the Police. A moochee was caught feeding the cattle with plantain and other leaves smeared with a white substance, which the Civil Surgeon ascertained to be arsenic. Rosheeran, one of the gang, confessed, and the crime has been thoroughly proved and established by evidence against two gangs.

3. In addition to the plan of thus feeding cattle, when opportunity offered, with poisoned leaves, the moochees arranged with a Mahomedan butcher and gave him Rs. 4 for every score of cattle poisoned by him; this man being unsuspected laid the poison about among the herds; when he found it was consumed, he gave notice to the moochees, who then went and skinned the dead cattle.

4. Arsenic was found in the houses of the accused, and inquiry in the bazaar showed that considerable quantities of this poison were sold; the names of the purchasers did not appear in the shopkeeper's books, and the trade was to a great extent kept secret.

5. A rascally Mooktear, called Obhoy Chunder Gooho, got scent of Mr. Kilby's inquiries, put the moochees on the alert, and very considerably hampered operations, and some of the ringleaders by his means evaded capture.

6. The destruction of cattle in the neighbourhood of the villages concerned has been very great; one man had a herd of 100, and lost all, he says, by poison, and has given up cattle keeping.

7. The defence is that the cattle died from the epidemic, but the bodies of some were examined and arsenic found in the stomach.

8. The symptoms of poisoning by arsenic are not unlike some of those lately described by Dr. Parris in his late report,—swelling of the body, running from the mouth, great thirst, pain aggravated by drinking, &c.

9. The Magistrate of Mymensing thinks that an Act should be passed regulating and restricting the sale of poisons. I fully agree with him. He refers to some Act he which states to be in force in Bombay, but of which I can find no trace, though well remember I discussions on this subject when the crime was prevalent near the Grand Trunk Road.

10. The proceedings and inquiries were ably conducted by Mr. S. J. Kilby, Officiating Assistant District Superintendent of Police, a young officer whose Police work does him great credit.

BURDWAN DIVISION.

BURDWAN. W. E. Ward, Esq.

From W. E. WARD, Esq., *Officiating Magistrate of Burdwan, to the Commissioner of the Burdwan Division,*—(*No.* 90 *P, dated* 25*th July* 1870).

With reference to your Circular No. 125, dated 25th ultimo, I have the honor to report that cases of cattle poisoning are exceedingly rare in this district; only two known cases occurred in the district last year.

3. In one case (tried at Bood-Bood) the defendant was a Bauri, who poisoned one cow by administering some drug to it.

3. In another case (tried at Culna) the defendant was a shoemaker, who also poisoned one cow.

BURDWAN.
W. E. Ward, Esq.

BOOD-BOOD MAGISTRACY.

Judgment delivered by BABOO PROTAB NARAIN SINGH, *Deputy Magistrate, dated 8th December* 1869.

Harotolla ... ... *Complainant,*

versus

Mona *alias* Mohun Bauri ... ... *Defendant.*

Prosecutor charges prisoner Mona Bauri with having killed a cow of prosecutor's by administering poison to it. The evidence for the prosecution shows that prisoner gave it some drug to eat, and that the cow died next day.

Prisoner denies the charge and cites witnesses in defence, Amoodhorein, Hongoo Bauri, and Hametolla, whose evidences are not trustworthy.

On the above grounds the Court finds prisoner Mona *alias* Mohun Bauri, guilty of the offence of mischief, punishable under Section 426 of the Penal Code, and sentences him to Rs. 10 fine, or in default to 14 days' simple imprisonment. Rs. 5 to be paid to prosecutor from the fine when realised.

CULNA MAGISTRACY.

Judgment delivered by BABOO DWARKANATH DEY, *Deputy Magistrate, dated 14th February* 1870.

The prisoner pleads guilty to the charge of poisoning complainant's cow, which was seen by witness Monee Mullick. I feel therefore no hesitation in convicting defendant of the offence specified in the charge, *viz.*, that defendant Deno Moochee committed mischief by poisoning a cow, and sentence him, under Section 429 of the Penal Code, to one year's rigorous imprisonment.

BOOD-BOOD MAGISTRACY.

Judgment delivered by BABOO PROTAB NARAIN SINGH, *Deputy Magistrate, dated 10th June* 1867.

No. 13.

Maya Gooalini ... ... *Complainant,*

versus

Ramdhon Moochee ... ... *Defendant.*

A cow of prosecutrix was grazing in the field of village Noorkoona. Prisoner administered some poison wrapped up in grass to the cow; on prosecutrix's outcry, witnesses Kangal and Dinonath Ghose came up and saw prisoner administer the poison to the cow. On seeing these two witnesses, prisoner was running away, on which they pursued and arrested him, and took him to the Mondul and Jemadar of the village (as usual). The cow died in consequence of the poisoning within two days.

Prisoner himself pointed out some poison from his house, and stated that it was similar to that which he gave to prosecutrix's cow. This poison was sent to the Chemical Examiner, and he reports that the substances were poisonous. Prisoner makes free and voluntary confession of the offence. On the above ground the Court finds prisoner Ramdhon Moochee guilty of mischief by poisoning a cow worth Rs. 10 or Rs. 12, in consequence of which the cow died, an offence punishable under Section 429 of the Penal Code, and sentences him to two years' rigorous imprisonment, out of which he is to suffer three days solitary confinement on the first three days of every month.

From F. N. MACNAMARA, Esq., M. D., *Chemical Examiner to Government, to the Deputy Magistrate, Bood-Bood,—(dated 8th June* 1867*).* Dr. F. N. Macnamara.

I have the honor to report that the packet sent with your letter No. 127 contained the seeds *oojar jahar* উজর ঝাড়.

These seeds are violently purgative, and would prove poisonous in unskilful hands.

The kernels of some of the seeds are wrapped up in horse-hair, and looked as if prepared to give as a bolus to some animal.

Note by BABU KANAI LAL DE.

BUDRWAN. Oojar jahar is the popular name of the plant Curcas (Jatropha) Purgans, vernacular name *Baghbharanda* বাঘভেরণ্ডা, N. O. Euphorbiaceæ, which grows wild in Lower Bengal. When once this plant commences to grow in one locality it is difficult to root it out, hence the vulgar name oojar jahar.

The seeds are purgative, and are occasionally employed in large doses to poison cattle.

HOOGHLY. F. H. Pellew, Esq. *From* F. H. PELLEW, Esq., *Officiating Magistrate of Hooghly, to the Commissioner of the Burdwan Division,—(No.* 311, *dated 6th August* 1870).

With reference to your endorsement No. 125, dated 25th June last, on Government Circular No. 58, dated 16th idem, I have the honor to report that the crime of cattle poisoning has not been on the increase in this district for the last few years.

2. During the last 12 months there were no cases of cattle poisoning in the Sudder Sub-division, as well as in that of Jehanabad, but in Serampore one case occurred, and the offender was brought to justice and convicted.

3. The circumstances of this case were as follows.

4. The convict had only been released from confinement for the same offence two or three months before. The accused was seen to deposit in front of a cow a small parcel; the owner of the cow seeing it and knowing the offender by sight, at once surmised foul play and rushed up, but too late to prevent the cow from eating what was deposited before it; he and his comrades at once pursued the accused along the public road; a Police Officer was coming in the opposite direction, and he caught him; on the body of the accused was found a knife, a needle, and a large lump of white arsenic; the cow died the same night, in the same way as 7 or 8 cattle had died before since the release of the accused. He was sentenced to two years' rigorous imprisonment.

5. Mr. Hopkins also reports that, since the information was called for, another offence of precisely the above nature was committed, but the offender could not be arrested.

6. Mr. Hopkins further states that the punishment prescribed by law for this offence, *viz.*, two years' rigorous imprisonment, is not sufficiently severe, for the chance of detection is very small, and the distress caused by the offence is very great. I do not, however, think that difficulty of detection is a good reason for enhancing the punishment.

7. He also advocates the restriction of the selling of white arsenic, which poison is generally used in such cases, and I agree with him that a restriction of the sale of this, as of all poisons, would be of great advantage.

Judgment delivered by J. A. HOPKINS, Esq., *Joint Magistrate, dated* 18*th November* 1869, *in a case of cattle poisoning.*

The accused Sodai Moochee was seen one day by Nundo Das to go up to a cow belonging to Anund Bagdi, and throw something in front of it which the cow ate. Nundo Das recognized Sodai Mochee, and shouted out to know to whom the cow belonged; it was claimed by Anund Bagdi, and he with Nundo at once pursued Sodai Mochee, who ran off. Anund Bagdi raised the hue and cry, and Sodai was seen in the arms of the Head Constable, who was coming along the road on other business.

On the body of Sodai Moochee was a lump of arsenic large enough to kill 20 elephants, a knife, and a needle. The defence of Sodai Moochee is that he had the arsenic to give to others, but that does not get over the difficulty of the administration of the poison. The cow died that night with all the symptoms of poison.

The Court finds Sodai Moochee guilty of the offence with which he is charged, *viz.*, poisoning a cow, an offence punishable under Section 429, Indian Penal Code; and the order of the Court is that he undergo two years' rigorous imprisonment; this is a second conviction for the same offence.

MIDNAPORE. J. C. Price, Esq. *From* J. C. PRICE, Esq., *Officiating Magistrate of Midnapore, to the Commissioner of Burdwan Division,—(No.* 123, *dated the* 23*rd July* 1870).

Referring to your Circular No. 125, dated the 25th ultimo, I have the honor to annex herewith a short statement showing the cases of cattle poisoning that were brought to the notice of the Magisterial Officers during the last five years in this district.

MIDNAPORE.
J. C. Price, Esq.

2. The cases are few and far between, and in the Mofussil very often false charges are brought against the Moochees by cultivators and others, who are at variance with them on account of their practice of killing cattle and buffaloes.

3. The cases are so very few that it is difficult to say whether the crime is increasing or decreasing.

The following cases of cattle poisoning were instituted during the years 1865, 1866, 1867, and 1868 in the jurisdiction of the Sudder Sub-division. The records of cases instituted during 1865 and 1866 have been destroyed by order of the High Court.

Srimati Kalli. *vs.* Tara Moochee.	The prisoner was discharged on 24th November 1865.
Moorad Bux *vs.* Jadoo Chamar.	Ditto ditto 3rd August 1865.
Mudun Sant *vs.* Seetul Bhooyan.	The prisoner was sentenced to 1 year's rigorous imprisonment.
Damoo Kullia *vs.* Koondra Moochee.	The prisoner was sentenced to 6 months' rigorous imprisonment, 10th May 1866.
Bhurut Patter *vs.* Kristo Moochee and others.	Prisoners were sentenced to 6 months' rigorous imprisonment, 31st May 1867.
Mudun Mahapatter *vs.* Raghoo Behara.	The prisoner was sentenced to 2 years' rigorous imprisonment, 25th November 1868.

Not a single case was brought to trial during the last twelve months in the Sudder Sub-division.

CHOTA NAGPORE DIVISION.

HAZAREEBAUGH.
Lieut.-Col. H. M. Boddam.

From LIEUT.-COL. H. M. BODDAM, *Deputy Commissioner of Hazareebaugh, to the Commissioner of Chota Nagpore,—(No. 702, dated 9th August* 1870).

With reference to your memorandum No. 1777, dated 23rd June 1870, giving cover to the correspondence as per margin, I have the honor to inform you that in October 1869 a man was arrested in the jurisdiction of the Paghar Thannah with a seer of white arsenic in his possession. On enquiry it was discovered that a party of chamars had come from the Gya District with a quantity of white arsenic, which they scattered in the fields where cattle were grazing; such of the cattle as ate the poisoned pasture died in about 24 hours from the time it was discovered they were ill.

Circular Memo. No. 58, dated 16th June 1870, from Officiating Secretary to the Government of Bengal, and letter No. 356, dated 10th June 1870, from President, Cattle Plague Commission, to the Secretary to the Government of Bengal.

Discovery of arsenic.

2. The cattle thus destroyed were made over by their owners to the chamars of the villages, and they sold them at low price to the Gya chamars.

Raid of Gya chamars.

3. The man arrested proved to be a servant to this gang of cattle poisoners who had been sent for a fresh supply of poison. This man produced a silver ring, and stated that at the sight of this ring a shopkeeper in Gya would supply the bearer with any quantity of arsenic.

4. The district chamars admitted having been supplied with arsenic for the purpose of destroying cattle, but of course denied having used it, and unfortunately no one would come forward to prosecute the scoundrels. The Gya chamars had in the interval quitted the district and could not be traced.

5. In June 1869 two men were arrested in the act, and confessed to having poisoned cattle by making large pills of the seeds of the *kurjunny* (abrus precatarious) and thrusting them into the anus of the cattle, who speedily died from inflammation of the bowels.

Poisoning with *kurjunny*.

6. One of these men was convicted and sentenced to receive 25 stripes.

7. I believe that very much of what is called cattle disease is the result of poison spread in the fields on which cattle are grazed, and that there is a great deal of this poisoning going on; but the natives are apathetic and make no efforts to trace the cause of their cattle dying, and consequently the Police are helpless.

CHOTA NAGPORE. Colonel E. T. Dalton, C. S. I.

From COLONEL E. T. DALTON, C. S. I., *Commissioner of Chota Nagpore, to the Deputy Commissioner of Hazareebaugh,*—(*No.* 2250, *dated* 18*th August* 1870).

Referring to your No. 702 of the 9th instant, I have the honor to enquire what was done to the man mentioned in para. 3. It is said in para. 5 that two men were arrested and both confessed to having destroyed cattle, but only one was punished. Please let me know how this was, and how the man punished was sentenced to 25 stripes.

HAZAREEBAUGH. Lieut.-Colonel H. M. Boddam.

From LIEUTENANT-COLONEL H. M. BODDAM, *Deputy Commissioner of Hazareebaugh, to the Commissioner of Chota Nagpore,*—(*No.* 755, *dated* 24*th August* 1870).

In acknowledging the receipt of your letter No. 2250, dated 18th August 1870, I have the honor to inform you that, on perusing the papers of the case which was tried by the Extra Assistant Commissioner, Mr. Bedford, I find that the two so-called men were two boys, the one too young to be punished, and the other under 16 years of age, and was therefore punished with stripes as a juvenile offender.

CHOTA NAGPORE. Colonel E. T. Dalton, C. S. I.

From COLONEL E. T. DALTON, C. S. I., *Commissioner of Chota Nagpore, to the Deputy Commissioner of Hazareebaugh,*—(*No.* 2349, *dated* 30*th August* 1870).

With reference to your letter No. 755 of the 24th instant, I have the honor to state you have not yet told me what was done to the man referred to in para. 3 of your letter No. 702 of the 9th idem.

2. I must remind you of the necessity of your reporting carefully on the cases of cattle poisoning instanced. From what is before me, I am under the impression that the Police and the magisterial authorities of your district missed an opportunity of bringing a gang of these atrocious criminals to justice.

3. I do not comprehend how the district chamars who admitted having obtained arsenic to poison cattle got off, or why persons not prosecuting should have caused a failure of justice All this needs full explanation.

HAZAREEBAUGH. Lieut.-Colonel H. M. Boddam.

From LIEUTENANT-COLONEL H. M. BODDAM, *Deputy Commissioner of Hazareebaugh, to the Commissioner of Chota Nagpore,*—(*No.* 785, *dated* 3*rd September* 1870).

I have the honor to acknowledge the receipt of your letter No. 2349, dated 30th August 1870, and with reference to the question asked in the first para., I beg to inform you that the man was released, as, beyond his own statement, no evidence that he had poisoned or abetted any others in poisoning cattle could be obtained.

2. The owners of the cattle in the vicinity of the place where the poisoning of cattle was said to have occurred declined to give evidence, and to acknowledge that any of their cattle had been poisoned or died otherwise than naturally.

3. The Police could not therefore obtain evidence that any cattle had been poisoned. Similarly the district chamars, though confessing that they had received the poison, did not admit having used it, nor could any proof of their having used it be obtained.

4. That there was a failure of justice is indubitable, but it was solely owing to the apathy of the cattle owners, who would not assist the Police in their investigation, and would not admit that any of their cattle had been poisoned.

MANBHOOM. Lieutenant C. H. Garbett.

From LIEUTENANT C. H. GARBETT, *Officiating Deputy Commissioner of Manbhoom, to the Commissioner of Chota Nagpore,*—(*No.* 1421, *dated* 13*th July* 1870).

With reference to your memorandum No. 1777, dated 23rd ultimo, with enclosures, I have the honor to report that out of three cases of cattle poisoning, reported during the past 12 months, one case proved false, and two cases were sent up for trial, the circumstances of which are as follows.

2. In the first case some poisonous powder was said to have been administered to the cattle. The powder was sent to the Chemical Examiner, who decided that it was not poisonous.

3. In the second case sent up for trial, the accused was caught in the act of administering the poison, which was either datura* or the root of the akund.† The death of the cattle was distinctly traceable to the poison administered, and the accused was convicted.

* Thorn-apple—datura.

† Swallow wort—(Calotropis gigantra).

4. The crime is hardly known in this district.

PATNA DIVISION.

PATNA.

From A. C. MANGLES, Esq., *Officiating Magistrate of Patna, to the President, Cattle Plague Commission,*—(*No.* 1017, *dated* 18*th July* 1870). A. C. Mangles, Esq.

With reference to Bengal Government Circular No. 58 of the 16th June 1870, requesting to prepare and forward to your office a short precis of such cases of poisoning as have been reported as true within the last twelve months, together with copies of such documents bearing upon the subject as may be found in this office, and also to report whether within the last few years the crime of cattle poisoning has been on the increase or otherwise, I have the honor to state as follows.

In the Sudder Sub-Division 4 cases were instituted in 1865, of which 3 were dismissed and 1 was struck off. In 1866 only one case was instituted, which resulted in the conviction of the defendant, who was sentenced to one year's imprisonment; during 1867, 1868, 1869, and 1870 no cases have either been sent up by the Police or instituted by petition. Sudder Sub-division.

Behar Sub-division.—In 1868 four persons were convicted in 3 cases in this Sub-division of poisoning cattle; in 1869 three persons in 2 cases, and during the present year one case only has been brought in, in which the defendant was discharged. Judging from the above, the crime appears to be on the decrease. Behar Sub-division. Crime on the decrease.

In 4 of the 5 cases during 1868 and 1869, in which convictions took place, the defendants were chamars; in the 5th case the defendant was a kunree.

The following are the preces of the 3 cases which occurred in 1868.

On 8th April 1868, information was lodged by the Goraet of Mouzah Bukhra to the Behar Police that while the cattle belonging to Mahadeo Muhto of the above village were grazing, the prisoner Sookun Chamar threw some poison before them wrapped up in some straw. One of the cattle picked it up to eat, but letting it fall again, the prisoner was making off with it, when he was caught by one of the villagers. 1st case.

The case was ordered to be enquired into by the Police, and the charge being thoroughly proved, the prisoner was sent up for trial. Before Deputy Magistrate Syed Zainwooddeen Hoosain Khan the prisoner confessed his guilt, and on conviction he was sentenced, under Section 429, Indian Penal Code, to rigorous imprisonment for two years. Convicted, 2 years' rigorous imprisonment.

On 11th April 1868, while the cattle belonging to the plaintiff, together with other cattle of the village, 40 or 45 in all, were grazing in the pasture, the prisoner Seela Dhur Chamar sprinkled arsenic on the ground where the cattle were grazing. 2nd case.

The cattle becoming frightened at his presence, attracted the attention of the cowherd, who went up and questioned the prisoner as to what he had been doing; some of the other villagers coming up at the time, the powder was found on the ground, which being collected was sent to the Civil Surgeon to be examined, and declared by him to be arsenic. Poison identified by Civil Surgeon.

The case was sent up for trial, and being fully proved, the prisoner was sentenced to undergo two years' rigorous imprisonment. Convicted, 2 years' rigorous imprisonment.

The prisoners Massamut Shamkoory Chamarni and Joomnee were caught in the act of administering poison to the plaintiff's cattle inside a pod of Indian corn. Before the Deputy Magistrate they admitted the charge, which was also otherwise proved by the plaintiff's witnesses. On conviction, each of them was sentenced, under Section 428, to rigorous imprisonment for one year. 3rd case. Convicted, 1 year's rigorous imprisonment.

One of the cases in 1869 was brought against two chamars by an inhabitant of Pitonjia Jhynapur. They (the chamars) were inhabitants of a place 15 or 20 miles off, and their attempt seems to have been a professional one. They were observed by the plaintiff strolling about near to where the cattle were feeding, and the suspicion which attaches to the chamar caste is shown by the fact of plaintiff's suspecting their designs, and asking them whether they belonged to their village; on their denying that they did, they were strictly watched, and so failed to administer any powder, but on being arrested on suspicion they were searched, and on one of them was found a chamar's knife and a quantity of poison wrapped up in some dry grass.

In the second case five chamars were accused, and two convicted. They were inhabitants of the village in which the offence was committed, and were observed to drop something near to where some cattle were grazing, which on being picked up was found to be a small parcel of poison.

The Cantonment Magistrate of Dinapore reports as follows with regard to his sub-division:— Dinapore.

"I have had no reports of cattle poisoning from the Police within the last twelve months, but two cases were prosecuted direct by the sufferers, and a third case I chanced to pick up in my wanderings through the town of Munair during my cold weather tour. There was also a fourth case that occurred in May 1868, a notice of which I may be permitted to include in this communication.

PATNA.
A. C. Mangles, Esq.

"(1). Sheochurn Koormee of Mouzah Noorpore Sater, Pergunnah Munair, appeared in Court on the 2nd of June 1868, and deposed that on the morning of the 29th May, while his cow was grazing close to the village, two chamars, named Ramdial and Imrit, who were father and son, were seen to go up to the beast and throw a tuft of grass before her. The witnesses knowing them to be chamars ran up, but too late to prevent the cow swallowing the bait.

Conviction, 2 years' imprisonment and fine.
Previous conviction.
Motive.

"The chamars took to their heels, but were followed and seized. On the following morning the cow died from the effects of the poison administered in the handful of grass. Ramdial was sentenced by me to two years' rigorous imprisonment and a fine of Rs. 25, or in default 6 months' extra rigorous imprisonment, and Imrit, who was but a lad, was fined Rs. 25, or in default to be rigorously imprisoned for two months. The prisoner Ramdial had on a previous occasion been sent to jail for 12 months on a charge of cattle poisoning. The prosecutor Sheochurn told me that for two or three years after Ramdial had been sent to jail the first time the complainants had peace, but that about the period of his losing his cow numbers of cattle were being poisoned for the sake of their hides.

Convicted, 19 months' hard labour.

"(2). Dumree of Mouzah Moostuffapore, Pergunnah Phoolwarry, on the 12th June 1869 charged Reetburrun and his brother Poorun, chamars, with having, on the morning of the 8th of that month, administered poison to his cow while she was out grazing in a manner similar to that mentioned in case No. 1. The offenders were seized after a long chase, and on conviction I sent them to jail for 19 months each with hard labor.

Fatal.
Convicted, two years' imprisonment and fine.
Practice common.

"(3). Bhoalee Koormee of Mouzah Kuthowteea, Pergunnah Munair, appeared in Court on the 2nd December 1869 and charged one Moolchand Chamar with having on the forenoon thrown something rolled up in castor-oil plant leaves to his bullock, where the animal stood fastened up close to his house. The prosecutor suspected that all was not right, and ran up, but too late to prevent the bullock swallowing the leaves, and meanwhile the chamar had effected his escape by running into some high standing crops. The bullock died on the following morning. Every effort was made at the time to discover the prisoner, but without success. On the 20th April, however, he was seized at Mouzah Bullooch in his own house by the village chowkeedar, and on conviction I sentenced him to rigorous imprisonment for two years, with a fine of Rs. 50, or in default of payment six months' extra rigorous imprisonment. In this case one witness says—'That is Moolchand standing before the Court, and he has an exceedingly bad name for cattle poisoning, but since he ran away after killing the prosecutor's bullock we have lost no cattle. Before that we were constantly subject to loss from our cattle dying suddenly.' Another witness says—'The prisoner is a notorious cattle poisoner, but never got taken till now. Previous to his running away we lost that year four or five bullocks, but none since.' A third witness says—'On the day prosecutor's bullock died, a calf belonging to Parshun also died, and ten days before that Hurnam's two bullocks died in the same way. Every month we lost one, two, or three animals, but since the prisoner ran away after poisoning the prosecutor's bullock we have lost no cattle.'

Convicted, 12 months' rigorous imprisonment.

"(4). This is the case I happened to pick up myself in the following way:—On the morning of the 16th February last, while enquiring into the chowkeedari assessment in the town of Munair, I entered the mohullah where the chamars reside, and hearing some one make the remark at my side 'There's that boy cattle poisoner back who tried to poison the widow's bullock,' I immediately made enquiries on the spot, and directed the Head Constable, who happened to be present, to bring the boy before me, but the lad had fled. He was, however, captured that same day, and the case regularly gone into. The widow Nuggeeah deposed that one day in October 1869 her bullock was fastened up in the verandah of her house, when she saw the prisoner Jugmohun Chamar throw something down rolled up in castor-oil plant leaves before the animal. Suspecting that it was poison, she hastened to the spot and succeeded in picking it up before the bullock got hold of it. On examination the packet was found to contain a quantity of white arsenic. The boy disappeared, and was not again seen for months. I convicted him of the attempt and sentenced him to rigorous imprisonment for a term of 12 months.

Method of poisoning.

"From these four cases, which occurred in broad daylight, it will be observed that the method of administering the poison adopted in each was to roll it up in either grass or leaves, and then to cast the packet before the animal. The poison is often, I have been told, thrown in the feeding troughs, and even sprinkled over the ground in places where cattle are usually sent to graze.

"Enormous numbers of hides are brought to Dinapore to be prepared and sent down to Calcutta, and it would be absurd to believe that all the good ones among them are the hides of slaughtered cattle. On the contrary, I am convinced that most of them are the skins of poor beasts that have been systematically poisoned by chamars for the sake of the hide. The hides of animals that die a natural death, or from old age or epidemic sickness, can generally be distinguished by those accustomed to handling them from the hides of slaughtered or poisoned cattle.

"In a very interesting letter to my address, dated 11th June 1869, Captain Hedayut Ally, Aide-de-Camp to His Excellency the Commander-in-Chief, furnished me with informa-

PATNA.
A. C. Mangles, Esq.

tion of a remarkable nature on the subject of the wholesale destruction of cattle by means of poison."

Lieutenant-Colonel Emerson, in speaking to me after he had sent this report, informed me that he had omitted to mention in it that during the cold weather tour he invariably asked at all the villages visited by him as to whether they had any cattle disease; the answer he received was always in the negative, but was followed with the remark—but we have lost several head of cattle by poisoning.

Barh Sub-division.

In Barh Sub-division only one case of attempt at cattle poisoning occurred from 1st January 1869 to 30th June 1870.

The short precis of the case is as follows:—

The prisoner was seen in the very act of throwing down some poisonous substance in front of complainant's bullock; the substance was examined and found to be arsenic.

The accused was accordingly convicted under Sections 511 and 426 of attempt to commit simple mischief, the value of the animal attempted to be poisoned being less than Rs. 10.

In 1866	1
„ 1867	1
„ 1868	2
„ 1869	1
„ 1870 up to 11th July	1

The number of cases of cattle poisoning in Barh Sub-division during the last few years is noted in the margin.

DINAPORE.

From CAPTAIN HEDAYUT ALLY, *A. D. C. to His Excellency the Commander-in-Chief, to the Cantonment Magistrate of Dinapore,—(dated 11th June 1869).*

Captain Hedayut Ally.

I beg to acknowledge the receipt of a pamphlet regarding the diseases of cattle and the medicine discovered by Dr. McLeod for them, which you kindly favored me with. As a cursory view of the treatise seemed to interest me, I carefully perused it, and am persuaded to believe that the diseases therein laid down breaking out among cattle carry off thousands of them, and the treatment specified would prove efficacious in arresting the progress of their baneful effects. I have therefore sent the work to the Tehsildar in my zemindari, with injunctions to try the remedies recommended therein in case of such maladies breaking out.

2. Since the attention of Government has been attracted to the disease which annually breaks out, and of a sudden destroys thousands of cattle, inasmuch as in the first place the husbandmen are the sufferers, and in the next, the decrease of those useful animals in every place enhances their price ten-fold. In this country the loss of cattle (the only beasts employed for tillage, and quite unlike most parts of Europe, where horses are used for that purpose) in one year is severely felt; in the next by causing decline of crops, and the poor, not getting a sufficiency of corn, experience great hardship: consequently I set myself diligently to trace out, to the best of my ability, the real cause, besides death by the visitation of God, to which these creatures fell victims, and am happy to find my researches have not proved altogether fruitless. From conversations held with those in the hide trade, and others familiar with the subject, I have succeeded in ascertaining the following facts, which I shall fully undertake to detail.

Hide trade.

3. Should a retrospective view of the hide trade as far back as the year 1840 be taken, and enquiry made as to the number and description of people who were then engaged in it, it will be found that they have increased ten-fold. Formerly the trade was confined to a few, *viz.*, chamars and butchers; the former dealt in hides obtained from cattle dying of natural death, and the latter of those slaughtered for consumption. Now-a-days many carry on this trade, who, having only one object in view, *viz.*, the greater the receipt of hides, the more profitable the trade, have established warehouses both in towns and districts, especially in the latter, and have appointed *gomashtahs* (agents) in different villages for collecting this commodity. A very limited number of dealers in this article engage *gomashtahs* on fixed salaries,—the greater number do so on the percentage system, giving them half the profits accruing from sales of hides procured through their agency, and reserving the other to themselves. Such lucrative inducements, without any risk, being held out to the *gomashtahs*, they continually watch the opportunity of effecting large purchases of good hides by every means within their reach.

4. By "good hides" is meant such as are heavy, uninjured, and the hair not spoilt, because it meets with ready and profitable sale; whereas those of the dead animals have bad hair on them, and are less in weight, owing to the effects of the disease, and are consequently sold at a cheaper rate. Hence all traders study to purchase good hides, and for that purpose advance large sums to the chamars in the interior without security.

DINAPORE.

Captain Hedayut Ally.

5. It appears that chamars in the districts have peculiar modes of poisoning cattle: they contrive in some instances to poison the pasture where cattle are wont to graze, or mix it up with fodder when not taken out to graze; and the poor creatures taking their food so poisoned, either drop down instantaneously, or die in a day or two afterwards, but never survive its effects. Their skins are ranked as "good hides," inasmuch as neither its weight diminishes, nor the hair gets spoilt. Impelled by the love of gain alone, they feel not the stings of conscience in carrying on this cruel and nefarious practice to obtain good hides within a shorter space of time than that required for collecting slaughtered ones. These are facts well known, and reason suggests the same; for it is customary in Hindostan for chamars to have the privilege of removing the carcasses of cattle dying in towns, villages, and parishes situated within the limits assigned to them, and by way of remuneration for their trouble in removing the carcasses, they are allowed the enjoyment of the horns, hides, and fat of the dead cattle. This tempts them to bring about the death of more cattle than would die of themselves at the places within their respective jurisdictions.

Motive.

Modes of operation.

6. During the rains and cold weather cattle are poisoned in excess, and it is also said that the chamars mix up poison with *suttoo* (pulverized parched grain used by common people as food) and sprinkle the mixture on the pasture or where grass is found in abundance, and the cattle feeding thereon die. It has also come to my knowledge that they have a kind of *awl* or needle tipped with poison, with which they wound the animal's tender part so as to draw blood, and the poison coming in contact with the blood pervades the whole system by circulation, and brings on the poor beast's death. This cruel method of killing the chamars have designated in their professional technicality *thokeeo* (by a poke), and that by poisoning grass or fodder, *beeroo* (medicines). The former mode is less in vogue than the latter, as it is more easily detected than the other; for instance, one of the fraternity asking another of the quantity and description of hides he has, is answered by the other in their own slang, such a quantity of slaughtered and such of dead, as also so many *thokeeo* and so many *beeroo:* the two last-mentioned kinds are ranked as slaughtered ones. This mode is more extensively practised in the country than in towns.

Advances.

7. Tradesmen advance large sums of money to chamars in the country for the supply of hides, which practice, in my opinion, is objectionable; for, to clear the advance received, they are induced to compass the destruction of cattle in such large numbers. It is also said that if the chamars be not able to clear the advances received from the hide dealers within a reasonable time, they are sent for by the latter and warned to clear their prescribed number of hides without delay, and the former promise to do so in a week or two, which they actually fulfil, when further advances are made to them, and they continue to compass the death of such numbers as would enable them to clear the advance-money received afresh.

Agents.

8. In Hindostan trade in hides is carried on mostly by the lower class, and by very few of the respectable circle; among the latter, only those do it who, observing that others engaged in it become rich within a short time, naturally feel the same desire to become so also. Very few of the lower class who follow any trade or profession care about good or evil, provided it is a source of profit; whilst the respectable part of the people think of making their fortune by their own honest exertions only, and thereby add to their respectability.

9. I am of opinion that, if enquiry be made into this matter, the number of cattle destroyed by poison will be easily ascertained, especially if notice be taken of the number of hide godowns in towns and the country, the number of hides annually exported from each, and the proportion of slaughtered and dead ones; the proportion of these two descriptions will be apparent. By slaughtered hides is meant those of animals killed for food; and by dead, those that die by natural death. On enquiry at the godowns, it will undoubtedly be discovered that such quantities of hides were sent thence as never could have come from the number of cattle killed for actual consumption, which plainly proves the description of hides mentioned in paragraph 5.

10. Since 1857-58, when the mutiny broke out, a larger number of European regiments are, of course, kept up, which necessarily causes a proportionally greater number of cattle to be killed for their use; yet not to the extent which the books of hide merchants will show to have been exported from Bengal and other parts of India.

11. Should the books of consignees and brokers of Calcutta, through whom all the hides of Bengal are sold, as also those of the dealers in other towns who carry on this trade, be examined as to the quantity of hides lodged in their respective warehouses by dealers from 1865 to the current year, and the proportion of slaughtered and dead hides in them, the aggregate will show an excess of the latter over the former, and the quantity of buffalo hides should also be ascertained; moreover, the proportion of hides especially denominated as slaughtered will far exceed the actual number of cattle annually slaughtered in Bengal, from which the poisoning of cattle will fully be proved. The hides of those quadrupeds that are killed by poison are made to resemble those of slaughtered, as neither the weight diminishes nor the hair thereon gets spoilt. From the merchants' books it will be apparent that so many head of buffaloes were never brought under the butcher's knife in Bengal as the hides sold would indicate, for buffalo meat is seldom used as food: hence a very limited number are killed for that purpose. From the above facts their natural death and that by poison will fairly be brought to light.

12. The Police should keep a vigilant eye over them, and take notice of the number of cattle dying of natural death, besides by the sickness which Dr. McLeod treats of, for which purpose books should be kept at the Police stations and outposts, in which causes of the death of cattle ought to be entered, and chowkeedars ordered to report to the nearest Police station or outpost the nature of disease which brought on the death of the animals. The Police, on suspecting any unfairness, should make investigations, and this will lead to the detection of poisoning or otherwise. Should the Police be active, it is not improbable that in some districts those having a hand in supplying the poison will be detected and apprehended. Moreover, when it is known that the Police are on the alert, the nefarious practice in question will cease, inasmuch as it will deter the perpetrators from doing so in future, and the sufferers will be relieved. Should the Police enter the causes of death in their books, the number of cattle annually carried off by different diseases, as well as the prevalence of murrain in any particular district, will be brought to the knowledge of Government. DINAPORE. Captain Hedayut Ally.

13. Should the above measures be adopted, and the books of the consignees and brokers of Calcutta and other towns be examined, the excess or diminution of exports of one year, and those of the one before, will be known; in all probability it will show a great falling off, as, in consequence of the short receipts, the dealers will likewise decrease; for, owing to the suppression of the practice of poisoning, it will be difficult to procure hides, which will considerably discourage dealings in that commodity, and bring it down to the scale as in time gone-by, and will leave the trade confined to hides of animals actually slaughtered for consumption, or which die from natural causes. In addition to what is above detailed, there are persons who can fairly detect hides produced by poisoning. Should such persons be engaged to examine the different descriptions of the hides in the several godowns, it will deter both the merchant from purchasing such hides and the chamars from poisoning for that purpose.

14. I have thought it proper to bring to light whatever has come to my knowledge, so that by some suitable and wise enactment the poisoners be detected, and others warned from practising similar acts of cruelty in future, which will thus prove beneficial to the poor.

In submitting the above for your perusal and consideration, I entertain the hope that you will be pleased, if you deem it necessary, to forward it to higher authority.

From W. H. D'OYLY, Esq., *Officiating Magistrate of Shahabad, to the President, Cattle Plague Commission,*—(*No.* 1560, *dated* 3*rd September* 1870). SHAHABAD. W. H. D'Oyly, Esq.

* * * * * *

2. It appears that in the Sudder Sub-division only 3 cases of alleged cattle poisoning have been reported as true since 1866. The first, it is alleged, occurred in 1866, in which Menuhuk Ganrari accused two chamars of poisoning his bullock. The Deputy Magistrate dismissed the case, as he considered it quite false.

2*nd*.—In January 1870, Sahai Aheer petitioned accusing Bishen Chamar of poisoning his buffalo. He abandoned the case immediately, and no evidence could be obtained.

3*rd*.—In June 1870, Dehi Hujjam accused Mussamut Sobdee, a chamarini, of poisoning his buffalo. The Joint Magistrate, Mr. Barbour, tried the case, but found the evidence so very unsatisfactory that he had no option but to release accused. The Joint Magistrate is of opinion that it would be very difficult "to satisfy a Magistrate that a bullock had been poisoned, unless there was a chemical examination of the contents of the stomach."

3. Mr. Armstrong, in charge of the Sub-division Buxar, says he has no reason to think that the crime of cattle poisoning is at all prevalent in his Sub-division. He only reports one case, in which the evidence was not sufficient for a conviction, the witnesses having said they saw accused giving *suttoo* to the cow said to have been poisoned, and they supposed poison must have been mixed with the *suttoo*, as the cow died shortly afterwards. Moreover the "evidence was contradictory." Mr. Armstrong reports that the crime apparently has been very rare, and certainly has not increased lately.

4. From Bhubuah the Deputy Magistrate reports that "no such case has occurred in his Sub-division."

5. Mr. Eyre, Deputy Magistrate of Sasseram, first informed me that only four cases had been reported, and all of them from Tilouthoo outpost. He added that this return was valueless, as he believes that in 9 cases out of 10 reported as deaths from *matah*, poisoning is the real cause of death. He considers that the most stringent orders should be passed forbidding the skinning of the carcass of any animal whose death has *bonâ fide* resulted from disease, putting in force Section 269, Indian Penal Code, in cases of disobedience of such orders. I was obliged to call for a further report regarding the four cases, which has to a great extent delayed my reply. Mr. Eyre subsequently reported that the four cattle poisoning cases were not reported to *him*. "In two cases out of four, Ramjeawun Telee was sentenced to 6 months' rigorous imprisonment, but of the other two cases no record is in the office." This is not very clear. He further reports that "the crime is very rare" in his Sub-division, but that when he was in charge of the Bhubuah Sub-division he observed that frequent notices were made of cattle dying of disease. I presume, therefore, it was from this that he said in his first report that he

SHAHABAD.
W. H. D'Oyly, Esq.

believed 9 out of every 10 reported deaths from *matah* were really caused by poison; but it will be remembered that cattle disease did occur to some extent in Bhubuah, and that Sub-division was visited by some members of the Commission.

It is impossible to tell from the records whether the crime has really increased or not, or whether it exists to any considerable extent. I think it very probable that chamars do often poison cattle for their skins, otherwise the Aheers would not, as they certainly do, suspect them. The chamarinis are the only class who practise midwifery, and many true cases of poisoning are concealed by cattle owners through the fear that their wives would not be able to obtain the services of the chamarinis as midwives if they gave information against them or their relatives.

If owners of cattle were to be made responsible for the destruction of the skins of animals dying from disease, perhaps the crime might to some extent be stopped, but the enforcement of such rule would be difficult.

CHUMPARUN.
PEPRA.
W. B. Hudson, Esq.

From W. B. HUDSON, Esq., *Manager of Pepra Concern, Chumparun,—dated 24th October* 1870.

The crime of cattle poisoning in my opinion is not a prevalent one, but is of actual occurrence in some instances. The great mass of villagers being Hindoos are naturally too prejudiced to be very reliable evidence on this subject. Out of a great number of cases brought to my knowledge by the ryots, only three have been proved to my satisfaction. On the other side, it is a crime very hard to prove.

2. Invariably chamars have been the perpetrators.

3. In these cases the poison used was *hurtal*. I do not know the English name.

4. Motive—invariably for sake of the hides.

SARUN.
C. B. Garrett, Esq.

From C. B. GARRETT, Esq., *Officiating Magistrate of Sarun, to the President of the Cattle Plague Commission,—(No.* 1173, *dated 5th September* 1870).

With reference to your letter No 356 of the 10th June last, to the address of the Secretary to the Government of Bengal, I have the honor to state that nine true cases of cattle poisoning were reported to have occurred in this district during the twelve months ending with 30th June last.

2. The first case, which was dismissed, occurred on the 12th July 1869. One Nukched Aheer complained that Mungar Chamar threw something before his cow, which it ate, and that on its way home it fell down and died. The Police enquired into the case, and reported that there was no evidence to support the charge against the accused; that the plaintiff had asked for a pair of shoes from Mungar, and that on being refused he might have brought the case against the chamar. It was accordingly struck off.

3. The second case occurred on the 14th July 1869. The prisoners, Bhowani Chamar and his mother, Mussamut Bhoonia, were accused by one Mahangoo Aheer of having poisoned two bullocks, two cows, and a calf belonging to him. It appears that the prisoners were seen doing something to the bullocks and the cows, which died suddenly, and that they afterwards went to a calf and were detected giving it something in a leaf, which was snatched out of its mouth by the herdsman, and found to consist of a white paste. Unfortunately this was thrown away, but the carcasses of the four dead animals were seen by the Police, who ordered them to be buried. The evidence was clear against the accused, and they were sentenced to 18 months' rigorous imprisonment each on the 19th September 1869.

4. The third case occurred on the 15th July 1869. One Doorga Dhobee informed the Darowli Police that Jewlall Chamar had poisoned his bullock. The Police enquired into the case and sent up the defendant for trial. He was convicted and sentenced to pay a fine of Rs. 25, or in default to suffer rigorous imprisonment for two months on the 17th August 1869.

5. The fourth case occurred on the 19th July 1869. In this case Mussamut Goonjree Chamarini was accused of having poisoned a bullock belonging to one Gobardhan. The Police enquired into the case, and it appeared that something covered in a leaf was thrown before the animal, but that it was snatched away from its mouth. The poison (apparently arsenic) was sent to the Chemical Examiner in Calcutta, but it was lost in transmission through the post. The accused, however, confessed to the crime, and was sentenced to rigorous imprisonment for 6 months on the 30th September 1869.

6. The fifth case occurred on the 29th August 1869. The defendants in this case, Dhannee Chamar and Joga Chamar, were seen to take advantage of the temporary absence of a herdsman and to go up to some cattle grazing in a field and throw in front of them some white substance wrapped up in the skin of an ear of Indian corn. The man Dhannee was

SARUN.
C. B. Garrett., Esq.

at once seized, but Joga escaped, and was only arrested a month after. The poison was sent to Calcutta for examination, where it was found to have been white arsenic. The case was clear against the defendants, and they were sentenced to rigorous imprisonment for one year and a half each on the 26th October 1869.

7. The sixth case occurred on the 23rd September 1869. One *Pultoo Borhai informed* the Burragaon Police that Jewlall Chamar had poisoned his bullock. This was reported to the Sub-divisional Officer at Sewan, who directed the Police to instruct the plaintiff to prosecute the man, which he never did.

8. The seventh case occurred on the 14th November 1869. Rampershad Rai and Ramsahai Rai, Agents of the Zemindar of Gootnee, informed the Police of that place that Sachoo Aheer had stated to them that Janaki Chamar had thrown before the cow of one Behari a handful of grass with poison in it; that the cow was about to eat it, but he (Sachoo) had prevented it. The Police enquired into the case, and reported it as true, but they were unable to send up the defendant, who had absconded. He was subsequently apprehended and sent up for trial, when he admitted that arsenic had been found in his possession, and that it was given to him by another chamar to poison the animal. He was found guilty of attempt to poison, and sentenced to rigorous imprisonment for one year and a half.

9. The eighth case occurred on the 17th March 1870. One Runjeet Rai charged Mussamut Soonia Chamarini of attempting to poison his cow, but that it was snatched away in the very act by Doonger Koormee. The Police enquired into the case, and reported the occurrence as true. There was, however, no evidence to ensure a conviction, and the prisoner was released from jail by order of the Magistrate on the 16th April 1870.

10. The ninth case occurred on the 11th April 1870. One Tapsee Hajam accused Bahari Chamar of poisoning his bullock, and swore before the Court that he saw the defendant administer some stuff, some of which he pulled out of the bullock's mouth. There were witnesses to prove his statement, but unfortunately the poison was burnt when the prosecutor's house and the rest of his village was destroyed by fire. The case was, however, clear against the defendant, and he was sentenced to rigorous imprisonment for two years and to pay a fine of Rs. 20 on the 4th May last.

11. I have called upon the District Superintendent of Police to furnish the information required in your second paragraph.

TIRHOOT.
Major J. G. Reeves.

Report by MAJOR J. G. REEVES, *District Superintendent of Police, Tirhoot,—(No.* 41, *dated 9th July* 1869*).*

In reply to your memorandum No. 493 of 3rd July 1869, I have the honor to state that I am quite at a loss to know what to suggest as regards the segregation of diseased cattle through the agency of the Police, but as this question is now under review, I would wish to state my opinion that, though undoubtedly hundreds of cattle do die actually from disease, a very large number are poisoned for the sake of their skins, and I think it would be worth while to consider a remedy for this at the same time as adopting any sanitary scheme. Any measure that would result in the destruction of skins of cattle dying in the district would be productive of the greatest good, and the only real protective system we could adopt towards the people as regards the wholesale poisoning that I feel convinced goes on. That such poisoning is carried on by chamars at the instance of the hide merchants in a wholesale way is a matter beyond doubt, but the detection is difficult, as, unless the poisoner is caught in the act of administering poison, there are no grounds on which a case would stand.

Prevalence of poisoning.

The poison used is generally white arsenic wrapped up in castor-oil leaf. On the death of an animal the chamars have it all their own way, from the apathy of the natives, their reluctance to touch a dead animal, and the trifling cost and labour burial would entail, which they would look upon as thrown away when the beast is dead; none but domes or chamars could be got to score the skin of a dead animal.

Poison.

I have before this given the matter my earnest attention with the view of destroying the skins through the agency of the Police, but could not see my way, as such supervision could not be carried out over the large jurisdiction pertaining to Police Stations. My opinion is that the only remedial plan, both as regards poisoning and sanitation, we could attempt would be to get the skins destroyed by the zemindars, and I would propose that a very large number of circulars in *Oordoo* be issued, pointing out simply that hundreds of cattle supposed to die from disease are undoubtedly poisoned for their skins; that the destruction of the skin would put an end to this as well as prevent the spread of infection in the case of skins of animals dying, asking the zemindars, through their resident agents, in the interest of their ryots to take measures to destroy the skins or cause the burial of dead cattle. Further, I would suggest that no person be allowed to deal wholesale or retail in raw skins without a license. I believe the owners never themselves sell the skins of deceased cattle, so that this, while affecting no private interest, would be a check on the chamars and give us supervision in the matter. If such a suggestion seems arbitrary, the vile nature of the acts to which it is proposed as a remedy should be borne in mind.

Destruction of skins.

License and trade hides.

TIRHOOT.
Major J. G. Reeves.

During the present year I have had three such cases of cattle poisoning brought to light. In two convictions were obtained against the offenders in the Sessions Court, and the third is now under Police enquiry.

The immediate issue of such notice would put the people more on their guard against the poisoners, and the orders regarding licensing any seller of skins might, if approved of, be hereafter carried out.

Capt. R. M. Skinner. *Report by* CAPTAIN R. M. SKINNER, *District Superintendent of Police, Tirhoot,—(No. 37, dated 2nd July* 1870).

In the year 1869 six cases of cattle poisoning were brought to light in the district of Tirhoot, and in compliance with the request contained in your memorandum I give below a short account of each case.

Case No. 1.—In the month of February several cattle having died off suddenly in village Bozitpore, station Mozufferpoor, the villagers began to suspect that they had been poisoned, and therefore kept a watch over the chamars. On the 19th February Dama and Nurkoo Gowallas saw a boy of 14 or 15 years old, named Sookun Chamar, throw some white poison wrapped up in a castor-oil leaf to the cattle in Nurkoo's *bo'hoso;* he was therefore seized, and confessed. Neour and Khaddaram Chamars had given him this stuff to throw to cattle. On enquiry it appeared that Neour and Khaddaram were in the habit of obtaining white arsenic from one Hosseinee Meah, a dealer in hides, and that they had poisoned several bullocks and had sold the hides to Hosseinee. Sookun was admitted as Queen's evidence, and Hosseinee, Neour, and Khaddaram were committed to the Sessions. Hosseinee was acquitted, but the other two were sentenced to two years' rigorous imprisonment each, under Section 428, Indian Penal Code.

Case No. 2.—On the 16th April Budri Chamar of Sajwana was seen throwing something to cattle belonging to Dussi Mulla; he was instantly seized and some white arsenic was found wrapped up in castor-oil leaves. Budri confessed his guilt, and being admitted as Queen's evidence stated that he had received the poison from Luchmun Chamar, who had poisoned several animals in Rajwara. Luchmun was committed to the Sessions, and on the 5th May was sentenced to one year's rigorous imprisonment.

Case No. 3.—About the 28th July two men, named Shearun and Hura chamars; when endeavouring to cross the Ganges at Khajkulla Ghat, city Patna, were arrested on suspicion of being in possession of illicit opium, when four seers of arsenic were found on them. The Magistrate of Patna directed enquiries to be made, in the Sarun District, but as their homes were found to be in this district, they were eventually sent to the District Superintendent of Tirhoot. On an enquiry being made, it appeared that Shoomrun with Sheorun Sahai and Shew Churn Chamars were in the habit of poisoning cattle, and that Shoomrun supplied the arsenic. Shew Churn was admitted as Queen's evidence, and Sheorun Sahai and Shoomrun were sentenced to two years' rigorous imprisonment each. Copy of the special report in this case is annexed for further information.

Case No. 4.—On the 5th July Muserun Chamar entered the *bothon* of Sowful Hajam of Madhoohunoie and endeavoured to make a calf swallow some poison wrapped up in castor-oil leaves. He was seized in the act, and on conviction was sentenced to one year's rigorous imprisonment.

Case No. 5.—On the 28th September Bedeshi Churroaha of Monon observed a woman named Mussamut Adhlee put a castor-oil leaf wrapped up before his cattle. He seized a bullock before it could swallow it, and got it out of its mouth; the woman acknowledged that it contained poison, and stated that she had got it from Jhoute Chammoo. This man on being questioned stated that some time previously he had poisoned cattle in company with a man named Soomerun, who was then in jail. Mussamut Adhlee was sentenced to one year's rigorous imprisonment. Jhoute was discharged.

Case No. 6.—On the 28th September Puchain Chamar threw poison wrapped up in castor-oil and bamboo leaves before the bullocks of Dis Chand Gowalla of Jitwarpore; they would not however eat it. He was taking it up again when Dis Chand seized him, and further search being made more poison was found concealed in his waist cloth. He confessed his guilt, and by his statement implicated Chukowri Rommun and Dureori Chamars, who also acknowledged they had poisoned cattle. Some arsenic was found in the houses of Rommun and Dumio. Puchain was sentenced to one year's rigorous imprisonment, and the other two to six months' rigorous imprisonment each.

In all these cases the poison used appears to have been the same, *viz.*, white arsenic, sometimes mixed with mustard-oil wrapped up in castor-oil and other leaf.

It is not easy to say whether this class of crime is on the increase or not, as, till last year, the suspicions of the Police do not appear to have been aroused in this direction, but I may mention what seems to me to indicate the existence to a large extent of this species of crime, and that is, that on more than one occasion when cattle have been supposed to

TIRHOOT.
Capt. R. M. Skinner.

have been dying off from diseases, deaths almost entirely ceased on measures being taken for the destruction of the skins; the inference from which would appear to me to be that a large number of the cattle had been poisoned chiefly by chamars, I believe, for the sake of their skins, and that when it was found that the skins were destroyed, and no further advantage was to be gained by carrying on their trade, these persons relinquished their efforts in this direction.

I beg to annex herewith copy of a memo. from Major Reeves, late District Superintendent of Police of this district, regarding this subject, as that officer served a long time in this district, and had given this matter very earnest attention.

In conclusion, I would respectfully urge what Major Reeves also strongly recommended, that Sections 428 and 429, Indian Penal Code, be made cognizable by the Police, as, under the existing state of the law, delay occurs in the Police obtaining the permission of the Magistrate to take up such cases, which, of all others, require prompt action with a view of being prosecuted to a successful issue.

Report by F. M. HALLIDAY, Esq., *Officiating Magistrate of Tirhoot,*—(*No.* 144, *dated the* 22*nd* *July* 1870). F. M. Halliday, Esq.

It is impossible to reply with any accuracy to the enquiry by the Commission in the 2nd para. of the President's letter to Bengal Government, for there are no data to go upon. As I have already on previous occasions reported to you, the general belief is that many of the so-called instances of cattle disease were really cases of poisoning, but more cases of cattle poisoning as so detected have been lately brought to light.

Report by MAJOR G. REEVES, *District Superintendent of Police, Tirhoot,*—(*dated* 30*th* *September* 1870). Major G. Reeve.

I beg to report this specially—a successful prosecution for poisoning cattle for their hides against the three men mentioned herein. My reasons for making a special report in the matter are, by showing to what extent I believe cattle poisoning exists, to further the views expressed in my letter No. 41 of 9th July, to your address, on this same subject. While cases are so difficult to come at or prove, the fact that this is the fourth of the sort successfully prosecuted this year shows beyond mere words that the crime does largely prevail, and to what extent may be guessed at when, as in the present case, the chamars had brought over some 6 or 7 lbs. of arsenic, enough probably to poison a thousand head of cattle.

In the present case two men, Heera and Shoomrun Chamars, were arrested in Patna by the Police of that district with the above amount of arsenic in their possession. As there is no law under which they could be touched for the same, they were sent on to Sarun to have enquiry made into their modes of livelihood, and from Sarun, their houses being in Lallgunge, they were sent on here. Knowing that the arsenic could not have been brought over but for the one purpose, I had the case enquired into, which has resulted in the conviction and a sentence of two years' imprisonment against the aforesaid Shoomrun and two others; more arsenic in small quantities was discovered in their houses. Of the cattle of two villages to which defendants belong no less than 135 have died during the present year, their symptoms said to have been all alike—swelling of the abdomen, saliva running from the mouth, and watery evacuations, death ensuing in a few hours from the first signs of the illness. Two of the defendants in Court confessed to having poisoned 6 or 7 of these, but it is natural to suppose that very many more of the above number were poisoned than these alone. The agent for the distribution of the arsenic, and from where they obtain it, was said to be one Gujadhur of Bankipore, an agent of some hide merchant of Dinapore. Gujadhur's house was searched by the District Superintendent of Police at my request, but nothing was discovered with him. The mode of giving poison, as mentioned in my former report, is, the arsenic is mixed with mustard-oil and given wrapped in castor-oil leaf. I am in hopes the prosecution of these cases may do general good, but I would again urge that no raw skin dealing be allowed without a license. The people are ready to help themselves, but are unwilling to press too hard directly on the chamars, from the fear that the chamars may refuse to attend their women in childbirth, they being the only class that will act as midwives among the entire population.

Report by E. MACNAGHTEN, Esq., *Begum Serai, Tirhoot,*—*dated* 23*rd* *October* 1870. E. Macnaghten, Esq.

Cattle poisoning is largely carried on here. It is invariably the work of chamars; the poison used is arsenic. It is generally put in the leaf of a castor-oil plant, which cattle are exceedingly fond of, and thrown before a bullock grazing. As far as I can learn, the poison is brought from Calcutta by the chamars who go down to work there; it is not procurable in the small bazaars here.

TIRHOOT.
E. Macnaghten, Esq.

Cattle are poisoned entirely for the sake of their skins; an ordinary hide is worth Re. 1-2 to 1-4, bullock's; a buffalo's is of course worth more. I have never heard of a bullock being poisoned for the sake of its flesh, but I have lost nine of my own at one time for the sake of the hides. Spite may have something to say in the matter at times, but very seldom. No other caste but chamars ever do it. It is of course entirely opposed to a Hindoo's prejudices. I consider cattle poisoning quite an organised crime.

The chamars take advances from the hide merchants (of whom there are many scattered all over the country), which they repay in hides. The process of giving the poison is so simple, and cattle eat it so readily, that it is exceedingly rare to catch the chamars in the act.

J. Tripe, Esq.

Extract from letter received from J. TRIPE, Esq., *Dinechupra Factory, Tirhoot,—dated* 10*th November* 1870.

Yellow arsenic is used in poisoning the cattle; the animal is punctured with a thick needle, in a groove of which the poison is introduced; the spot selected is usually an inch below the ear. Poison is obtained, I believe, in the bazaar here; about any quantity could be purchased in Nepal, which is 4 miles distant.

Motive,—for value of the hide; sometimes for spite; never for the sake of the flesh.

Another method of poisoning somewhat prevalent amongst chamars is very curious and fatal. The head of an animal defunct of the cow-pox is cut off and buried in the ground until it becomes quite putrid; the needle already represented is then stuck in the putrid mass, and introduced into the neck of the healthy beast; it very soon dies.

E. D. Urquhart, Esq.

Extract from letter received from E. D. URQUHART, Esq., *Arrowah, Tirhoot,—dated* 2*nd November* 1870.

This crime (cattle poisoning) is very prevalent in these districts, and is generally perpetrated by the chamars, who poison cattle for the mere sake of the skins. Nearly all the chamars more or less carry on this trade, for it is an understood thing that in all villages when cattle die the skin belongs to the chamars of that village. There are two ways the chamars carry on this trade; 1*st*, by poisoning, and 2*nd*, by stabbing with a poisoned iron. The poison generally used is called *sunkea*, and this is also of two kinds, one a composition, and the other a kind of quartz very like arsenic. The method adopted is, the *sunkea*, being sweet, is rubbed or placed in a green leaf and given to the bullock, which readily swallows it, or else it is scattered in small pieces over the grass where cattle feed, and the sweet taste attracts them to the spot, and as many as five or six are killed at a time. The poison is very virulent, generally killing the animal in a short time. The other way of killing by poisoning is by dipping a nail or sharp pointed piece of iron into poison, which nail is inserted into the end of the common *luttee* (or stick which natives generally carry about with them), and as the chamar gets into a herd of cattle he merely stabs them in or about the hump. The poisoned part inflames and gets into the system, and generally kills in about four to five days. This is called *dakree*, and it is not so common as the first way.

The hides are all sold to the hide merchants, of whom there are any number scattered over the whole of the district, the principal large godowns being at Patna, Messee in Champarun, Roaserah, Heeajeepoor, Tirhoot, Ningee Godree, Chuprah, and Alligunge in Chuprah, besides many others. Poisoning is generally carried on for the sake of the hides, but now and then it may be done out of spite. The poison is sold in the Mofussil by the *pussari*, one kind of *baneeah*, but they are very careful not to acknowledge that they keep it. Domes also sometimes kill cattle, but they do it for the sake of the flesh, they being the only people who eat cattle which have been poisoned.

BHAUGULPORE DIVISION.

BHAUGULPORE.
V. T. Taylor, Esq.

From V. T. TAYLOR, Esq., *Officiating Magistrate of Bhaugulpore, to the President of the Cattle Plague Commission, Calcutta,—*(*No.* 819, *dated* 14*th July* 1870).

With reference to your letter No. 356, dated 10th ultimo, to the Secretary to the Government of Bengal, a copy of which was forwarded with the Commissioner's office memo. No. 169 of the 16th idem, I have the honor to forward herewith a short precis of cattle poisoning cases instituted during the last 12 months. It will be seen that out of the three cases reported only one was proved and the offenders punished. Copies and translation of judgment in the cases are enclosed for your inspection.

In the years 1867 and 1868 there was no case of poisoning cattle.

In the year 1869 two cases were tried by the Joint Magistrate of Bhaugulpore on 28th October and 7th December last.

The one was tried on 28th October last—

Bookee Mundur,
versus
Luckoo Chamar and others.

In this case the complainant charged the accused with attempting to poison cattle, and thereby causing mischief under Sections 284 and 430, Indian Penal Code. The complainant stated that he saw the accused throwing a bundle of grass mixed with poison near his cattle.

The Joint Magistrate after hearing the witnesses for the prosecution and defence dismissed the case and discharged the accused.

The other was tried on 7th December last—

Bishendyal Bhuggut,
versus
Gumheer and Lalla Chamars.

Complainant charged the accused with causing mischief by poisoning a cow, under Sections 425 and 428, Indian Penal Code.

Complainant stated that his cow was eating *bhoosi* in his *bathan*, which is close to the house of the accused, who were on bad terms with him for a long time past. The accused mixed some arsenic with the *bhoosi*, by eating which the cow died.

The Joint Magistrate struck off the case for the non-appearance of the complainant on the day fixed for the trial, and further ordered, if complainant again appeared, that this case would again be taken up, but he never did appear.

In the current year only one case has been instituted, and this was tried by Deputy Magistrate Isheq on 3rd May 1870—

Bhitchook Muhton
versus
Bishnath Chamar.

Complainant stated that the accused had thrown a bundle near his cattle which were grazing in a field. Complainant ran to look after the bundle, when the accused fled. Complainant took up the bundle, and found it was mixed with poison.

In this case the Deputy Magistrate sentenced the accused to 4 months' rigorous imprisonment, a sentence which appears to me to have been ridiculously lenient.

Translation of a decision of Moulvie Shah Mahomed Isheq, Khan Bahadoor, Deputy Magistrate of Bhaugulpore, in the case of Bhitchook Muhton versus Bishnath Chamar.

Shah Mahomed Isheq Khan Bahadoor.

Complainant states that the accused Bishnath Chamar went to the field where his (complainant's) cattle were grazing and threw some grass, which was mixed with poison, near the cattle, with intention that the cattle might eat it and die. The complainant arrested the accused in the field when running away, and took him, together with the poisonous grass, to the Police. The accused denies the charge, and says that he was passing by that side with intention to buy a goat; that when he reached near the complainant's cattle the latter arrested him on this false charge. He, the accused, further says that he had a quarrel 15 or 16 days ago with the complainant about smoking tobacco in a toddy shop, on which the complainant had threatened him, saying that should he (the accused) be ever seen passing by that side he will see him. This is the reason why the complainant had arrested him on this charge.

On hearing both parties, the Court determines that the defendant's allegation of his having a quarrel with the complainant for which the accusation had been made against him is false. He made this allegation only to free himself from the charge laid against him.

Besides the evidence for the prosecution, there is the strong presumption against the accused; the cattle were grazing in the field at a distance from the road: what made the defendant suddenly come there to buy a goat? If the defendant did not give the cattle the poisonous grass, the complainant would never arrest him in the field without any cause.

It is also absurd to think that the complainant kept some poisonous grass with him with intention to accuse and arrest the defendant in the field on this charge whenever he would be found passing by that side. How could complainant know that the defendant would pass by the very road on the very day on which this action took place? Such a case cannot be instituted by one against another in a quarrel about a *cheelum* of tobacco. It is possible that the crime has been committed by the prisoner, who belongs to the caste of chamars who frequently kill cattle in the Mofussil for eating their flesh and taking their skin. If the prisoner was not guilty of this charge, why would he then try to run away when he was arrested?

From the evidence of the witnesses, as well as from the records of the case, it appears that the charge, that he (the prisoner) attempted to commit mischief by poisoning cattle with intention to kill them, under Sections 429 and 511 of the Indian Penal Code, is fully proved. It is therefore ordered that the prisoner be sentenced to 4 months' rigorous imprisonment.

MONGHYR.
Cases of Cattle Poisoning.

MONGHYR MAGISTRACY.

CASES OF CATTLE POISONING, DATED 10TH JULY 1870.

Sebho Mundul,

versus

Mussamut Pepuriah and two other women.

In this case the defendants were seen throwing a small packet of grass and leaves close to two oxen which were tied. The packet was snatched before it could be eaten by the oxen, and on examination was found to contain white arsenic. The prisoners were convicted of the crime.

Sono Mundul,

versus

Dillah Chamar.

The defendant Dillah was seen stabbing a cow with an iron *sutari*, shoemaker's awl; it fell down and died. The prisoner confessed to his having done so, adding that he wetted the hook with *dukra* poison before he stabbed the cow. He was sentenced to two years' rigorous imprisonment.

Kashi Singh,

versus

Jhontee Chamar.

The prisoner was seen wrapping up in grass some white stuff, and giving it to a buffalo, which died three hours afterwards. The Joint Magistrate who tried the case did not believe the evidence and acquitted the defendant, as he considered it was unnatural on the part of the owner to allow his cattle to eat a white substance given by a stranger while he stood at a distance of some yards and looked on without attempting to take out the packet of grass from the animal's mouth.

Kunhye Singh,

versus

Chutterbhooj Chamar.

The prisoner was seen giving something wrapped up in castor-oil seed leaf, by eating which the animal died. The prisoner was sentenced to two years' rigorous imprisonment and a fine of Rs. 20, in default six months more.

Brij Lall Dass,

versus

Mengla Chamar.

The prisoner was seen attempting to force poison into a cow's mouth; he was there and then apprehended with the packet of poison.

He was sentenced to two years' imprisonment.

Ram Narain Singh,

versus

Behari and Dillah Chamars.

This case is analogous to case No. 3. The prisoners were sentenced to two years' rigorous imprisoment each.

RAJSHAHYE DIVISION.

RAJSHAHYE.
C. E. Lance, Esq.

From C. E. LANCE, Esq., *Officiating Commissioner of the Rajshahye Division, to the President, Cattle Plague Commission, Calcutta,—(No.* 130, *dated the* 29*th July* 1870).

With reference to Government Circular No. 58, dated 16th June last, I have the honor to report for your information that the offence of cattle poisoning is of rare occurrence in this Division. In Dinagepore and Pubna the offence is never known to have been committed, and in Maldah and Bograh there were no cases of cattle poisoning within the last 6 and 5 years respectively.

RAJSHAHYE C. E. Lance, Esq.

2. Similarly in Moorshedabad and Rungpore there were no cases reported during the last 12 months; it is therefore difficult to draw any comparison between the past and the present, or to express any opinion on its increase or decrease.

3. In Rajshahye also there were no true cases reported within the last 12 months. There was only one case in 1868, a brief history of which is herewith annexed.

4. The facts of the case are as follows:—Akbar Duffadar's cow was grazing in the Banbah race course on the 28th October 1868, when the accused, Nakari Chamar, was observed to give her something to eat in a palm leaf. The same evening she was attacked with diarrhœa, and died the next day (29th) at 9 or 10 A. M. The accused was caught in the act by the complainant and his men, and taken to the nearest Municipal Police Section House. There was no doubt that the cow was poisoned by the accused. The case was disposed of by the Magistrate, who, in consideration of the serious nature of the offence, sentenced the prisoner, on the 31st December 1868, to two years' rigorous imprisonment and a fine of Rs. 50, in default to a further period of imprisonment.

5. It is to be noticed that the complainant deposed that in 1868 he lost eight cows, in 1867 none; that the dead cows were thrown out on the *maidan* (field), and the chamars took off their skins; that the eight cows which he had lost died just as the one above referred to, and not of small-pox; that up to the date of the defendant's arrest, not only complainant, but many others lost their cattle, and that since he (defendant) was caught no cattle died.

6. The accused was one of those chamars who occasionally visit this district for the purpose of cutting cane in the jungles, and for selling and repairing *dhámás* (cane baskets, &c.), and who prepare leather-covered *petáráhs* (boxes).

N. W. PROVINCES AND OUDH.

Index of Records.

			Page.
1.		Tabular statement of cases of convictions, North-Western Provinces, for 1869 ...	685
2.	Azimgurh District.	—Narrative of proceedings with regard to cattle poisoning in 1854	685
3.	„ „	Letter from J. Sladen, Esq., with abstract of 24 cases of cattle poisoning, dated 26th July 1870	703
4.	Benares „	J. Lawrence, Esq.—list of 24 cases of cattle poisoning, dated 19th July 1870	704
5.	Ghazeepore „	W. Oldham, Esq., Magistrate, dated 3rd December 1869,—a general description of the nature and prevalence of the crime	704
6.		Statement of arsenic imported and hides exported at Calcutta, Madras, Bombay, and Kurrachee during the 10 years ended 31st March 1869 ...	705
7.	Ghazeepore District.	—W. Oldham, Esq., Magistrate, dated 25th July 1870, forwards copies of 47 decisions in cases of cattle poisoning (tabulated and summarised)	706
8.	Mirzapore District.	—J. Simson, Esq., Magistrate (23rd July 1870), with tabular summary of cases of cattle poisoning which occurred from July 1868 to July 1870	709
9.	Bustee „	P. Wigram, Esq. (14th July 1870)	713
10.	Goruckpore „	W. Young, Esq. (14th July 1870)	713
11.	Allahabad District.	—C. J. Robertson, Esq. (6th September 1870), forwards statement of 24 convictions for cattle poisoning (tabulated) ...	714
12.		*Futtehpore, Banda, Cawnpore, and Humeerpore Districts.—Magistrates state that no cases have been instituted during preceding* 12 *months (letters dated in July and August* 1870*).*	
13.	Jounpore District.	—C. Daniell, Esq., Magistrate (6th January 1869), describes the system of cattle poisoning discovered to be practised in the district	714
14.	„ „	Abstract of 41 cases of cattle poisoning (tabulated), with general remarks	716
15.	„ „	Illustrative cases. Extracts selected from the preceding ...	718
16.	„ „	Evidence of villagers of Adumpoor (4th June 1870), (with copy of agreement with chamars)	723
17.	„ „	Statement of Messrs. Chabry and Freeman (5th June 1870) ...	725
18.	„ „	Evidence of villagers of Luckimpore (6th June 1870) ...	725
19.		Extract from the report of the Chemical Examiner to Government, North-Western Provinces, for 1869	726
20.		Note on cattle poisoning by Captain C. A. Dodd, with remarks by Mr. Mayne, Commissioner, Allahabad Division, Province of Oudh ...	728
21.		Summary of report of Mr. G. J. Low, regarding cattle poisoning in the district of Fyzabad	734
22.		Secretary to the Chief Commissioner of Oudh forwards correspondence regarding cattle poisoning (15th August 1870)	735
23.		Tabular statement of cases of convictions, Oudh	737
24.	„ „ „	Punjab	738
25.		Reports regarding the working of Bombay Act XIII of 1866	738

Statement showing the number of cases of cattle poisoning instituted, and the number of convictions obtained in each District in the North-Western Provinces during the years 1867, 1868, *and* 1869,—*dated Allahabad, 26th January* 1871. N. W. PROVINCES.

Divisions.	Districts.	Years.	Number of cases.	Persons supposed to be concerned.	Arrested.	Convicted.	Acquitted.	Remarks.
MEERUT.	Meerut	1867	...	...	...	...	...	
		1868	...	...	...	...	...	
		1869	1	1	1	1	...	
	Seharunpore	1867	...	...	...	...	...	
		1868	1	2	2	...	2	
		1869	...	...	...	...	...	
ROHILCUND.	Budaon	1867	...	..	...	...	...	
		1868	2	3	1	...	1	
		1869	...	.	...	...	...	
AGRA.	Futtehgurh	1867	1	1	1	1	...	The District Superintendent remarked—"No professional poisoner in any of the above cases."
		1868	...	...	...	...	...	
		1869	4	5	4	3	1	
ALLAHABAD.	Allahabad	1867	...	...	...	...	...	
		1868	...	...	...	...	...	
		1869	13	48	44	40	4	
	Jounpore	1867	...	...	...	...	...	
		1868	5	6	1	1	...	
		1869	61	89	89	45	43	1 under trial at close of the year.
BENARES.	Benares	1867	...	...	...	...	...	
		1868	1	1	1	1	...	
		1869	24	44	35	9	26	
	Goruckpore	1867	...	...	...	...	...	
		1868	1	1	...	...	...	
		1869	4	7	5	5	...	
	Azimgurh	1867	...	...	...	...	...	The District Superintendent writes "that the return for 1867 cannot be made out, as cases of cattle poisoning were entered in the Magistrate's Crime Return under the head of "Mischief."
		1868	3	3	3	2	1	
		1869	25	40	40	26	14	
	Ghazeepore	1867	...	...	...	...	...	The District Superintendent remarks that "there is no record of cases of cattle poisoning having occurred in 1867 either in Magistrate's or Police Office."
		1868	18	20	20	12	8	
		1869	68	*110	110	75	35	* The District Superintendent reports that "no record is kept of the number of persons concerned in each case, therefore the number arrested has been put down as concerned."
	Mirzapore	1867	...	...	...	...	...	
		1868	...	...	...	...	...	
		1869	14	20	15	10	5	
	TOTAL FOR THE WHOLE N.W.P.	1867	1	1	1	1	...	
		1868	31	36	28	16	12	
		1869	214	364	343	214	128	
	GRAND TOTAL ..	...	246	401	372	231	140	

BENARES DIVISION.

Narrative of the proceedings of the Government, North-Western Provinces, with regard to a system of cattle poisoning discovered in October 1854. AZIMGURH.

This narrative has been obtained from records placed at the disposal of the Cattle Plague Commission by order of His Honor the Lieutenant Governor of the North-Western Provinces.

The earliest communication on the subject is from Mr. H. C. Tucker, Commissioner and Superintendent of Police, Benares Division. It is dated the 16th October 1854 (No. 485). He informs the Government that Mr. Campbell, Magistrate of Azimgurh, has apprehended 45 persons who confess to an extended system of poisoning cattle for the sake of their hides; that 42 more poisoners have been apprehended, and that the system appears to be ramified throughout the whole district. He requests leave to depute Mr. Bird, Extra Joint Magistrate Discovery of the crime.

AZIMGURH. at Goruckpore, to Azimgurh, in order to afford assistance to Mr. Campbell, and to be able, on his return to push the investigation in Goruckpore.

This measure is approved by Government, No. 2206, dated 28th October 1854.

Mr. Tucker forwards (No. 147, dated 23rd October 1854) a further report of the operations in Azimgurh, enclosing a letter from Mr. Campbell, and requesting, "as there is not any rule laid down for the punishment of this crime (cattle poisoning), and the number of criminals has extended to an amount requiring the greatest care in dealing with them, the speedy orders of His Honor as to the charges upon which the different classes of criminals ought to be committed." He further approves of the suggestion that it would be advisable to appoint a good officer to hunt up the ramifications of this crime.

Number of criminals embarrassing.

Mr. Campbell's letter, which gives up to this point the origin and history of the inquiry, would suffer by any attempt to condense it, and is given in full.

G. Campbell, Esq. *From* GEORGE CAMPBELL, Esq., *Officiating Magistrate of Azimgurh, to the Superintendent of Police, 5th Division, Benares,—dated 16th November* 1854.

With reference to recent communications on the subject of the discovery of an extensive system of poisoning cattle, I have the honor to inform you that as my own powers are, I fear, inadequate to deal with the crime, I shall probably think it my duty shortly to commit for trial at Sessions a very large number of criminals. Even should there be no very great fresh extension of the case, I calculate that I have already the means of prosecuting to conviction nearly five hundred offenders.

Proposed charges.

2. I think of framing the charges somewhat as follows:—

COUNT I.—Against all the defendants, conspiracy to poison cattle for the sake of their skins.

COUNT II.—Against certain individuals, distributing arsenic with a view to poison cattle for the sake of their skins.

COUNT III.—Against certain individuals, secretly selling arsenic in large quantities, well knowing that the same was intended to be used for most unlawful purposes.

COUNT IV.—Possibly against certain individuals, improperly and secretly selling arsenic under the strong presumption that the same will be used for illegal purposes, and contrary to established rule and practice (but I hope it will not be necessary to put in as a precautionary measure so mild a count, which is inadequate to the fact).

COUNT V.—And onwards to the number of several hundred against different individuals, poisoning certain cattle of certain individuals for the sake of their skins.

Mode of prosecution.

3. I should be grateful for any opinion or suggestions as to the form of prosecution. The crime, I believe, is not specifically provided for by the regulations, and we are therefore thrown back in theory on the Mahomedan law; in practice I fancy very much on the prosecutors' and judges' ideas of what iniquity ought to be criminal, since few of us know much of the Mahomedan law. I myself confess to know very little of that law, and having had the misfortune to lose my library, and deprived of the books of reference with which I had provided myself, I cannot find in the abstract and index books any guide to precedents in cases of this class, but the crime is by no means a new one. I have had experience of it before on a smaller scale, and have prosecuted to conviction, but the cases which I particularly remember occurred in non-regulation provinces, and I have no distinct remembrance of the result of particular cases in the regulation districts. I therefore think it well to make this communication before finally framing the charges.

4. It may perhaps be well, with reference to judicial arrangements, that Government should be aware of our intention to commit several hundred criminals on so serious and peculiar a charge which will, I fear, involve the examination of several thousand witnesses, and the trial of which must, I apprehend, occupy several weeks. I trust that the judge's health will be re-established, but it is possible that he may be obliged to take temporary leave for change of air.

The work severe.

5. You have been kind enough to depute Mr. Bird from Goruckpore for a fortnight to assist me in the investigation of the case. I shall try to complete it as early as possible, but we are at present fully occupied in taking the answers of the prisoners who come in daily in large numbers, as the investigation proceeds; and though the proof will mainly rest on the confessions of criminals, the comparison and tallying of different confessions, the discovery of arsenic, and the correspondence between the confessions and the books of the dealers in arsenic, it will be necessary to take the evidence of the owners of all the cattle which the prisoners confess to have poisoned, and of many witnesses to search of houses, discovery of poison, &c., as the necessary witnesses will have to come in to the sessions trial, I am unwilling at present to drag a vast number of witnesses, necessary and unnecessary, into the station, and would wish to take the depositions in the villages, where the crime has been most common, and there sift the evidence necessary for the sessions trial; I should wish to depute for this duty the officer placed at my disposal, and hope that you can permit him to remain till he has completed it.

AZIMGURH. G. Campbell, Esq.

6. I speak of the whole of this investigation as one case, although it involves a vast number of instances, because we have already succeeded in tracing most of the isolated cases upward to great parent stems, whence the arsenic was disseminated, and from which the whole system flowed. It appears, therefore, that the whole of the cases are of the nature of a vast conspiracy between certain leather merchants, *banniahs*, poison distributors, and the village chamars who administered the drug to the cattle. A very aggravating feature of the case is that the ringleaders seem to be generally the chowkeedars and garyets of villages; a very large number of these men have been discovered. Ramifications of the crime.

7. We had been for some time aware that the crime more or less existed, isolated cases had now and then been discovered or suspected, but it was considered doubtful how they were to be treated, and the Police of the district, always disposed to inactivity, threw cold water on complaints; at last a man was caught in the act of giving a poison ball, and gave some valuable information which (mainly through the activity and instrumentality of Allee Khan) led to the seizure and confession of a number of offenders. On the first sign of important discovery, I at once took upon myself the responsibility of waiving all technical doubts as to the nature of the offence and mode of procedure, and insisted on all Police Officers acting at once and vigorously, upon any information of the crime, whether a formal petition was received from a plaintiff or not. The tehseeldar of Sagree and some other officers obtained fresh clues, and I even found a satisfactory one in the immediate neighbourhood of my own compound. The attention of the people was now aroused, and they showed a public spirit in the matter seldom seen in India. Confession having once become the fashion, almost all the new men from day to day seized (being doubtless somewhat ignorant of the facilities of the law, and considering the men who had already peached to be evidence against them) have frankly stated whatever share they had in the matter, and told the whole story, and the discovery of arsenic and other circumstances have removed all possibility of doubt of the genuineness of the confessions which have been made before me, and which I have carefully tested. The confessions have generally also led to the discovery of sufficient evidence against those offenders who had denied. Narrative of discovery.

8. We have occupied ourselves particularly in tracing up the source of the poison, and as we proceeded we found that the names of certain individuals were many times repeated in different quarters as having supplied it, and these men being seized, again referred us to superior criminals still higher in the scale, till at last we found that the clues of investigation derived from different and distant cases ended in one of two sources,—Kopagunj of this district and Bahadurgunj of Ghazeepore, whence we hope to trace them still further. The Kopagunj case has been the most fully investigated, and we find that a leather merchant and a *banniah* worked together, the latter procuring arsenic in large quantities, which the former distributed to his clients. These clients are all chamars; a certain set of men sworn to secrecy distributed poison to subordinate agents along with advances for leather, and the latter distributed it to the village chamars. The number of cattle poisoned seems to have been *very* large, and the agriculturists generally did not suspect what was going on, but attributed their losses to natural causes. The cattle seem to have swallowed the arsenic without difficulty, either in a handful of grain or in the leaves of the castor-oil plants, or more frequently in a ball of flower, and the effect seems to have been remarkably certain, death ensuing after an illness varying from a few hours to 2 or 3 days. It is quite frightful to think how excessively general the practice had become, how completely a large portion of the population has been familiarised with the use of the most fearful instrument of destruction, how easily it might be applied to still worse uses, and how difficult discovery and conviction would have been if we had not fortunately been so much aided by confession. Source of the poison. Extent of the crime.

9. You will observe that I have as yet carried the investigations little beyond the limits of this district, but my letter and memorandum of 9th instant will have informed you of the deputation of Allee Khan to the eastward (a step which will, I trust, meet with your approval), and Mr. Thornhill of Ghazeepore has promised me his most zealous co-operation. Mr. Thornhill tells me that several cases have occurred in his district, but that he has not been so fortunate as to obtain confessions. I am not yet prepared to express a decided opinion how far the crime may be proved to have commonly prevailed in other districts, but I think it may be worthy of consideration whether the matter may not be of sufficient importance to make it desirable to suggest to Government the advantage of deputing, in communication with the Government of Bengal, a competent officer to investigate the subject generally after the manner of the Thuggee system, and, if possible, to ascertain the extent to which the crime prevails throughout the country. Several of my chief offenders, who find themselves irretrievably compromised, express themselves ready and willing to render material aid in prosecuting enquiries to the eastward. A peculiar crime of this kind can only be fully met by special measures. Other districts. Special inquiry suggested.

10. When I have completed the investigation of the cases now before me, I shall think it my duty most earnestly to urge upon Government the necessity of moving the Legislature to enact specific laws for the punishment of this peculiar crime, and for regulating the sale of arsenic and other poison, and also to suggest the advantages of providing some mode of testing poison more accessible than a reference to Calcutta. I trust that you will excuse the very Special legislation.

AZIMGURH. G. Campbell, Esq.

hurried style of this letter in the midst of numberless occupations and arrangements (principally connected with these cases) which to-day distract me.

P. S.—Mr. Bird, on reading this letter, suggests that I have omitted to mention a feature of the crime important in determining its nature, namely, the system under which the chamars become possessed of the hides and skins of the dead animals.

Village chamars.

The cultivators of each village are parcelled out among certain families of chamars; the latter perform certain services for the cultivators, and receive the hides of all the animals belonging to their own particular cultivators which die. Hence individual chamars, when they poison a particular animal, obtain possession of the body in virtue of a prescriptive right of the nature of a contract and well established.

Division of profits.

The men who supplied the poison generally stipulated for ⅓rd share of the skin as the price of the poison, and purchase the other ⅔rds, or sometimes a fixed price was put on the poison and deducted from the price of the skins. The intermediate agents were remunerated by charging an enhanced price for the arsenic, or by a commission on the skins. The leather merchants obtain by this system skins plentiful and cheap, and the *banniahs* gain by charging a high price for the illicit article supplied.

The law explained.

In reply to these communications, the Secretary to the Government of the North-Western Provinces (W. Muir, Esq.,) in a letter (No. 2235A) dated 6th November 1854, indicates the course prescribed to a Magistrate when an act may not specifically be declared an offence under the regulations, namely, "to call for a Futwa from the law officer explanatory of the subject." He surmises that the offence of maliciously killing cattle is punishable under Mahomedan law, as well as accessoryship thereto, or conspiracy for the purpose, probably under the head of Tazeer; he points out that under a Futwa or Tazeer, a Magistrate may punish to the limit of his power or commit to the Sessions Court. He recommends the Magistrate to commit the leading offenders and spare no pains to investigate the crime and complete the proof. The more ordinary criminals should be dealt with according to the extent of the Magistrate's power. He remarks on the hurtful nature of the practice, as regards agricultural interests, and requests the Commissioners to call the attention of other Magistrates to the matter.

A copy of this correspondence is forwarded to the Government of Bengal (No. 2236A, dated 6th November 1854). In reply, the Government of Bengal forwards a copy of a Circular (No. 5, dated 4th December 1854) issued to Commissioners drawing their attention to the subject, and enjoining them, if the evil is found to exist in any district, to impress upon Magistrates the necessity of immediately adopting measures for its suppression. Meantime Mr. Tucker forwards, No. 164, dated 20th November 1854, a further communication from Mr.

Further discoveries.

Campbell regarding subsequent proceedings, investigations, and discoveries. Mr. Campbell in a letter (No. 111, dated 16th November 1854) states that the dealers who sold arsenic directly to the chamars of the Azimgurh District have been ascertained to be shopkeepers at Kopagunj in the Azimgurh District, Ghazeepore, and the cantonment of Dinapore.

The wholesale arsenic merchants, who supply these shopkeepers, principally reside in the city of Patna, and obtain their arsenic from Calcutta.

Arsenic is imported by sea in considerable quantities almost entirely by native dealers.

Source of arsenic.

The traffic is not prohibited or restricted. Large quantities of the poison were found in the Patna shops, and evidence was obtained from the shopkeepers' books that still larger quantities had been sold within the last year or two. It is admitted by the dealers themselves that the traffic has enormously increased within the last two or three years, and especially last year.

Trade in arsenic.

White arsenic has lately been reduced in price and become more accessible. They can't account for the greatly increased consumption, and know of no legitimate use to which it is applied, except as a medicine, and to mix with whitewash for English gentlemen's houses in order to keep off insects.

Leather merchants.

Leather merchants appear to be generally connected with the system of poisoning. One Patna merchant admits having received from Calcutta during the year 100 maunds (or nearly 4 tons) of arsenic; his books show the sale of 88 maunds, and upwards of 11 maunds were

Amount of arsenic found in Patna shop.

found in his shop. The arsenic was retained and the dealers liberated on an engagement to produce their books before the Magistrate of Patna, if required. There is a wide distinction between yellow arsenic (*haritul*) and white arsenic (*sunky*). The former is largely used in manufactures and in painting, and being bulky cannot be used for secret poisoning. The rate of white arsenic wholesale is Rs. 18 per maund. Instructions are requested as to the disposal of 20 maunds 6 seers and 2 chittacks of white arsenic obtained from the shops of 7 dealers. Mr. Campbell concludes by stating as his opinion that some restriction upon the traffic in poison is necessary, and that no serious inconvenience is likely to result from the absolute prohibition or very stringent restriction of the sale of white arsenic.

He appends a list of the quantities of white arsenic retained in his possession and found in the shops of individuals who have not been put on their trial, being merchants who have sold the poison wholesale to other dealers, but not retailed it to chamars. AZIMGURH. G. Campbell, Esq.

Names of Dealers.	Residence.	Quantity of Arsenic.			Remarks.
		Mds.	Seers.	Ch.	
Kunhya Lall	Patna ...	0	31	0	These and many others admit to have sold much larger quantities during 1 or 2 years past, and have sold upwards of 88 maunds during the last year, and these brokers show large quantities already sold.
Roshun Lall	Ditto ...	0	8	0	
Sheikh Wahudally	Ditto ...	11	31	1	
Hajee Sohun Lall	Ditto ...	4	12	1	
Bantee Khutree	Ditto ...	2	0	0	
Gungram Mahwary	Ditto ...	0	35	0	
Narain Panday	Ditto ...	0	9	0	
Total ...	.....	20	6	2	

Mr. Tucker, in forwarding this letter for the orders of Government, remarks that the importation of arsenic is authorized at a duty of 10 per cent. by Section 3, Regulation XV, dated 1825. The Legislature can hardly have contemplated the sale of this virulent poison by maunds; is of opinion that measures should be taken to restrict within very narrow bounds the sale of white arsenic, which has been used so largely to destroy cattle. Restriction of sale of poisons.

In reply, the Secretary to the Government, North-Western Provinces (W. Muir, Esq.), in a letter (No. 2503A) dated the 14th December 1854, addressing the Commissioner of Benares, states that the Lieutenant Governor authorizes the payment of the fair market value of the arsenic obtained from the dealers at Patna, and retained by the Magistrate of Azimgurh.

Mr. Muir further (2502A, dated 14th December) writes to the Medical Board enquiring what observations and suggestions they may have to offer regarding the traffic in white arsenic disclosed by the Magistrate of Azimgurh, and whether there is any large demand for white arsenic.

The Medical Board (letter No. 1389, dated 24th January 1855), in reply to the preceding, state,—1*st*, that it does not appear clearly that systematic cattle poisoning has been proved by the correspondence; 2*nd*, that from a return furnished by the Customs it appears that there has been in recent years no increase of importation of white arsenic, but rather the reverse; suggest further investigation by local authorities; 3*rd*, have no reason to believe that its medicinal or economical use has increased of late years. Uses of arsenic.

Haritál is used largely in the manufacture of shell-lac, and is largely imported into Mirzapore for that purpose. On a former occasion (30th March 1853) the Board suggested the expediency of an enactment being passed requiring that the qualifications of all retailers of medicines should be tested, and now consider that an Act, requiring dealers to report to the Police any considerable sales of arsenic or other poisonous drugs, would not be an oppressive interference on the part of Government.

Mr. Muir also (No. 2501A, dated 14th December 1854), addressing the Secretary to the Government of Bengal, requests that a report may be called for from the Magistrate of Patna on the large importations of white arsenic referred to by the Magistrate of Azimgurh, and as regards the objects for which such extensive supply of the article are procured, and the parties to whom the arsenic is usually sold.

(Letter No. 363, dated 27th December 1854). The Secretary to the Government of Bengal forwards the preceding to the Magistrate of Patna with a view to obtain the information requested.

Mr. Ainslie, Magistrate of Patna (No. 42, dated 31st January 1855), is unable to ascertain for what purpose the large quantities of arsenic are obtained. The dealers finding a demand imported it to supply that demand. It is principally sold to *beparis* who go westward, and a small quantity is sold to medicine dealers weekly. The dealers declare that they never heard of its being applied to any other purpose than those mentioned by Mr. Campbell, and that there have been no recent specific large orders for the article. Can't ascertain how, and with whom, the demand originated. The demand has been steadily increasing for 2 or 3 years, and whereas formerly a seer was sold for Rs. 2 to 4, it has since fallen to 2 annas, and lately 6 annas per seer. Thinks that the wholesale dealers in Patna were not aware that the arsenic was to be employed for destroying cattle, as the destruction of cattle is an offence against the Hindoo religion. Sale of arsenic.

Mr. Grey, (No. 997, dated 10th February 1855), Secretary to the Government of Bengal, forwards this letter to Mr. Muir, Secretary to Government, North-Western Provinces, who forwards this correspondence, with Mr. Ainslie to the Medical Board for further remarks. In a subsequent letter No. 1833A of 25th August 1855, the Secretary to the Government, North-Western Provinces, forwards a correspondence with the Commissioner of Benares relative to the disposal of the arsenic obtained from the Patna dealers, which was ordered to be effectually destroyed under the advice of the Medical Officer, for the Board's information. Disposal of the arsenic.

The Medical Board (No. 1475, dated 21st January 1856), in reply to the preceding, have been unable to obtain any additional information to that previously given. Recommend that the

AZIMGURH.

arsenic should be divided into several portions, and buried deeply in some low, undrained, marshy spot of some remote jungle.

The Apothecary to the East India Company (No. 145, dated 31st October 1855) informs the Medical Board that large quantities of arsenic are purchased by up-country dealers extensively for the purpose of preserving timber; it is also used, mix up with paint, for covering the bottoms of ships; believes that arsenic is used for the purpose of poisoning cattle.

Uses of arsenic.

The Collector of Customs, Calcutta (No. 259, dated 9th September 1855), informs the Medical Board that the amount of white arsenic imported into Calcutta between 1st December 1854 and 31st August 1855 was 244 maunds 36 seers 1 chittack.

Another correspondence.

While this general correspondence is going on, another correspondence of a more special, but not less interesting and important character, regarding the legal aspects of the matter, is carried on between the Government of the North-Western Provinces and its legal advisers. It arose with the following letter from Mr. Muir, Secretary to the Government of the North-Western Provinces (437, dated 30th December 1854), addressed to the Officiating Registrar, Nizamut Adawlut, North-Western Provinces:—

With reference to reports which have appeared in the public prints on the trial of a Thannadar in the Azimgurh District for the homicide of parties under the infliction of torture for the purpose of obtaining confessions in regard to cases of cattle poisoning, the Lieutenant Governor requests the Court, should the matter not have already come under their cognizance, to send for the proceedings of the trial, and to communicate such orders or remarks thereon as may seem to them to be called for.

Torture to obtain confession.

Mr. H. W. Dashwood, Officiating Registrar to the Nizamut Adawlut, replies to this letter (No. 306, dated 30th March 1855), enclosing documents which give very complete information as to the subject under inquiry, and on the question of the proper method of dealing with the newly discovered and extensive crime of cattle poisoning. This correspondence is given *in extenso*, as showing the difficulties which executive authorities at that time experienced in dealing with this crime. Though the details referring to the case of torture arising from the excessive zeal of the Police, acting under stringent orders of the Magistrate, are somewhat irrelevant, they cannot be removed from the narrative without injuring its interest and value.

Mr. Dashwood's letter and its enclosures are as follow:—

NIZAMUT ADAWLUT, NORTH-WESTERN PROVINCES.

Present.

A. W. Begbie,
M. Smith,
Judges.
C. C. Jackson,
Officiating Judge.

Your Circular No. 377, dated 2nd February last. My reply No. 166, dated 7th idem.

In continuation of the correspondence specified in the margin, I am directed by the Court to forward, for the purpose of being laid before the Hon'ble the Lieutenant Governor, transcript of various papers particularized below, elucidating the cases of conviction of two Police Officers, a Thannadar and Mohurrir, in the Azimgurh District, for an act of culpable homicide connected with an investigation into a system lately detected in that zillah of killing cattle by poison for the sake of their hides.

2. The Court at large concur generally in the remarks recorded by the Judge of the Nizamut Adawlut, who has gone through the proceedings of these cases and recorded the result in a note. They agree that the commitment should, in both cases, have been made for the higher grade of crime, and that the sentences imposed by the Sessions Court must, in both instances, be considered inadequate to the serious nature of the offence.

Legal character of the crime of cattle poisoning.

3. Upon the separate question which has come under discussion in connection with these cases, namely, the legal character and complexion of the offence of cattle poisoning for the sake of the hides of the animals, I am desired further to transmit copies of documents, as quoted in the margin, which will indicate the opinion of the majority of the Court, that the offence in question can only be regarded under regular law as a misdemeanour, which Officers of Police are not of themselves competent to take up and investigate.

My letter to Sessions Judge of Azimgurh, No. 197, dated 16th February last.
Sessions Judge in reply, No. 11, dated 28th idem, with English enclosures.
Note recorded by Mr. M. Smith, dated 20th March.
Ditto ditto by Mr. Begbie, dated 23rd idem.
Ditto ditto by Mr. C. C. Jackson, dated 23rd idem.

4. As the view of the Court is not unanimous on this point, and as the offence is serious, and not apparently confined to the locality where its prevalence has been lately developed, being not at least unknown in the Bengal Districts,* the Court will be ready, in the event of the Government desiring it, to communicate on the subject with the Presidency Court, with the object of ascertaining their sentiments on the legal question.

* See case of 9th August 1851 in Calcutta Nizamut Adawlut Reports.

ENCLOSURES.

Copies of papers alluded to in paragraph 1.

Remarks of Sessions Judge of Azimgurh, extracted from Statement for December 1854, on conviction of Syud Roshun Allee, Thannadar, and others (culpable homicide).

Remarks of Sessions Judge of Azimgurh, extracted from Statement for January 1855, on conviction of Sheikh Mohumud Allee and others (culpable homicide).

Memorandum of Mr. M. Smith on the proceedings of the above trials sent for and inspected, dated 9th February 1855, and those shown in the margin of paragraph 3.

No. 6.

No. 307.—Extract from Abstract Statement of Prisoners punished, without reference to the Nizamut Adawlut, by the Sessions Judge of Zillah Azimgurh at the Jail Delivery for the month of December 1854.

1	2	3	4	5	6	7	8	9	10	11	12	13
Number of Cases.	Number of the Prisoners.	Number of Crime corresponding with Statement No. 6.	Names of Prisoners.	Sex.	Age.	Religion and Caste.	Profession.	Crime charged, where perpetrated, and name of committing officer.	Crime established.	Convicted on presumption or on full legal proof.	Sentence of the Sessions Judge, and when it was passed.	Explanation and Remarks.
1	2	5	Syud Roshun Allee, Thannadar of Behareegunge, son of Sadut Allee.	Male	56	Mussulman..	Service	In respect to defendant No. 2, count 1, culpable homicide of Ramdehul Chamar, counts, for exceeding his powers as Police Officer in subjecting Ramdehul Chamar to a course of excessive ill-treatment from which he died. In respect to defendants Nos. 3 to 5, accomplices to the above.	No. 2 convicted of culpable homicide of Ramdehul Chamar; Nos. 3, 4, 5, accomplices to the above.	Full legal proof.	No. 2 to be imprisoned for 3 years without irons, and to pay a fine of Rs. 200; Nos. 3, 4, 5, to 18 months each without irons and to pay a fine of Rs. 50 each on or before 4th January 1855, or in default of payment to labor until the fine be paid, or the term of sentence expire.	The crime of poisoning cattle for the value of their hides, horns, &c., would appear from the proceedings in this case to have existed for some time in this district, though only lately brought to light by the exertions of the Police. An enquiry into a case of this nature led to the crime with which the prisoners, Police Officers, now stand charged. The facts are as follows:—
	3		Boodhoo Khan, son of Futteh Khan.	Ditto	35	Ditto ...	Ditto					On the 27th October last, a chamar, by name Pundee, apprehended on a charge of poisoning cattle, confessed before this Thannadar to the crime, and stated that he had received the poison made use of on the occasion from the deceased Ramdehul chamar; on this information the Thannadar (on the night of the 28th) proceeded to his village and seized the deceased Ramdehul and other chamars, male and female, and searched their houses with a view to the discovery of poison; the capture of the deceased was effected about 3 o'clock A. M., and he was kept under the surveillance of the burkandazes and chowkeedars till 8 A. M., when the Thannadar returned from a search in other adjoining villages. The deceased
	4		Ally Buksh Khan, son of Mohil Khan.	Ditto	30	Ditto ...	Ditto					
	5		Runjeet Khan, son of Bhoojawan Khan.	Ditto	50	Ditto ...	Ditto					

having denied the concealment of any poison in his house, had, by the order of the prisoner No. 2, his hands tied behind his back by the prisoners Nos. 3, 4, and 5, and after being beaten by them with a soft wood called *roud* (said not to leave marks of injuries) was suspended from a tree, his toes nearly touching the ground; he was twice released and taken to his house to search for poison, and brought back again and similarly beaten and suspended, till at last he sunk exhausted from ill-treatment, and died at about 3 o'clock P. M.

No. 6,—*continued.*

EXPLANATION AND REMARKS,—*continued.*

AZIMGURH. Five eye-witnesses, Gooman Goreit, Bukus Goreit, Bundhoo Chowkeedar, Boodhoo, and Elahee Buksh, Gonds, all certify to these facts, and Bukus and Bundhoo also state that the Thannadar himself struck the deceased. The witness Pabaroo is a Zemindar of the village; he is old and his sight defective, but he confirms these statements, as does also Mussamut Googoree, the widow of the deceased.

The Civil Surgeon deposes both at the Fouzdaree and Sessions to marks from cords having been tightly bound round the arms of the deceased, and to an abrasion of the skin on the left side of the chest, but could find no other marks of violence on his person; and Dr. Stewart gives it as his opinion that the deceased could not have died from the effects of poison, as no traces of such could be found on an examination of the stomach and intestines, nor of any malady, but considers that death was the result of long fasting and ill-treatment, and that the expression of his features showed that he died in pain and suffering.

The prisoners Nos. 2 to 5 make a partial confession at the Fouzdaree; that of No. 2 is duly attested by the Joint Magistrate, but the attestation of the subscribing witnesses is not strictly in form; both have, however, been duly attested before me by the witnesses, and the Joint Magistrate will be cautioned for the future.

Before this Court all the prisoners plead not guilty and call witnesses to their defence.

The Thannadar in his defence repeats his partial confession before the Joint Magistrate, and further admits that he ordered the Burkundauzes to take the deceased away and "sumjhao" him; he pleads his long service as a Police Officer without fault, and his having acted in the present instance from zeal for the public service, and under instructions from the Officiating Magistrate to exert himself in the detection of the crime of poisoning cattle; but the prisoner aggravated his crime, in my opinion, by falsely reporting the deceased to have died from the effects of poison, and the proceedings of the Magistrate's Court show that he must on that day or the day previous have received an order from the Magistrate warning him against the practice of seizing accused parties without proof and of having recourse to excessive measures to extract confessions, and no excess of zeal can justify the resorting to maltreatment of such a nature as to result in the death of the victim. Prisoners Nos. 3 and 4 in their defence admit having seen the deceased bound by the arms, and to having heard that he was beaten by order of the Thannadar, but deny having taken any part therein or being present when he died. Prisoner 5 denies his Fouzdaree confession or having had any hand in the maltreatment, but admits that on his return he saw the deceased bound and suspended from the branch of a tree.

The three witnesses called by the Thannadar criminate instead of clearing him of the charge, for although they deny having heard the Thannadar give any orders, yet they admit his being present and their having seen the deceased beaten, bound, and suspended from a tree; the witnesses called by the Burkundauzes, with one exception, state that they were not on the spot at the time, but I place no reliance on their statement, as they all live about two miles from the spot, and one witness denies his ability to state anything in their defence.

The jury unanimously convict the prisoner Roshun Ally, Thannadar, of culpable homicide, and Boodhoo Khan, Ally Buksh, and Runjeet Khan, Burkundauzes, of being accomplices in the same, and discredit the evidence of their witnesses. I concur, and taking into consideration all the circumstances of the case, the prisoner's past services under the Government, and the advanced age of the Thannadar, I sentence the prisoner No. 2 to 3 years' imprisonment, without irons, and to pay a fine of Rs. 200 within one month, and prisoners Nos. 3, 4 and 5 to 18 months each, without irons; also to pay a fine of Rs. 50 each, within one month, in lieu of labor.

No. 6.

No. 308.—Extract from Abstract Statement of Prisoners punished, without reference to the Nizamut Adawlut, by the Sessions Judge of Zillah Azimgurh at the Jail Delivery dated the 30th January 1855.

1	2	3	4	5	6	7	8	9	10	11	12	13
Number of case.	Number of prisoners.	Number of crime corresponding with Statement No. 1.	Names of prisoners.	Sex.	Age.	Religion and Caste.	Profession.	Crime charged when perpetrated, and name of committing officer.	Crime established.	Convicted on presumption or on full legal proof.	Sentence of the Sessions Judge, and when it was passed.	Explanation and Remarks.
1	3	5	Sheikh Mahomed Ally, son of Sheikh Mahomed Ally.	Male	30	Mussulman	Service	Count 1 against defendants from Nos. 3 to 6, culpable homicide of Kodge Chamar. Count 2 against defendant No. 3, fabricating a false report, supported by false evidence, in abuse of his duty as a Police Officer. Nos. 4, 5 and 6 of culpable homicide.	No. 3 convicted of culpable homicide of Kodge Chamar; count 2, fabricating a false report, supported by false evidence, in abuse of his duty as a Police Officer.	Full legal proof.	No. 3 to be imprisoned for 7 years; Nos. 4, 5, and 6 to 5 years each, with labor and irons. The 4th January 1855.	The Officiating Magistrate has rightly committed on a charge of culpable homicide, and the case is one of an aggravated nature. The facts relating to the case are correctly given by the Officiating Magistrate in the abstract of his grounds of commitment. It therefore only remains for me to remark on the examination of the evidence and the proof in support of the charge. Dowlat (son of the deceased), together with the witnesses Bhikaree Gorait, Khodabuksh Khan, Zemindar, Gobkurdhun Sonar, Wahid Khan, Zemindar, Hunsraj Chowkeedar, Oogur Gorait, Nundoo Chumar Gopee and Nunkoo Chamars, all depose to the seizure of the deceased with a view to the discovery of
	4	...	Ashruf Ally, son of Bukus Khan.	Ditto	28	Ditto ...	Ditto					
	5	...	Byjnath Singh, son of Mukur Singh.	Ditto	35	Hindoo ...	Ditto					
	6	...	Deen Bahadoor Singh, son of Jokhoo Singh.	Ditto	25	Ditto ...	Ditto					

poison used in the destruction of cattle from his house, and to his being beaten by the prisoner Mahomed Ally, Officiating Thannadar, and the other three prisoners (Burkundauzes) till he died from the effects of the injuries received. The wife, Mussamut Subea, arrived only in time to see her husband expire, but does not speak of having witnessed the beating. The above facts are corroborated by the statements of the witnesses to the circumstances, and it is stated that the deceased was a strong healthy man, and four witnesses spoke of the body bearing marks of severe beating; the body was conveyed from the house of the deceased to the Thanna by the witnesses Nundoo, Gopee, and Nurkoo Chamars, with the aid of witness Membodh Chamar, and subsequently carried away and thrown into the river Dewah by these 4 persons by order of the Officiating Thannadar and under guard of these 3 Burkundauzes. The evidence of the Civil Surgeon in proof of the extent of maltreatment and actual cause of death has not in consequence been obtained, but there is otherwise sufficient proof to establish these facts, and the falsification of the papers and concealment of the actual crime fully proved by the evidence of the witnesses Dhurm Roy, Pergoss Roy, Dhooman Khan, Dwarka Misser, Khakoor Misser, Ramjeeawan Oopudhik, Rampudamalall, Seejeiwan, Bunneah, Dumoee, goldsmith, Bhola, sweetmeat-seller, and Mohun Doss, and an examination of the proceeding considerably aggravated the offence against the prisoner No. 3. The prisoners all plead not guilty and call witnesses to their defence. The prisoner No. 3 urges in his defence enmity against him on the part of the Thannadar and Jemadar of Secunderpoor, but the witnesses called by him do not support this assertion, and deny their ability to clear him in any way of the charge, as do also the witnesses called by the prisoners Nos. 4, 5, 6, to their defence.

The jury unanimously convict the prisoners Nos. 3, 4, 5, and 6 on the first charge, and No. 3 also on the second count. I concur, and sentence the prisoner Mahomed Ally, No. 3, to 7 years' imprisonment, with labor in irons, and prisoners No. 4, Ashruf Ally, No. 5, Byjnath Singh, and Deen Bahadoor Singh, No. 6, to 5 years' each, with labor in irons.

No. 309.

AZIMGURH.
M. Smith, Esq.

Memorandum by M. SMITH, Esq., *on the proceedings on the trial of Roshun Ally and others, and Sheikh Mahomed Ally and others, sent for inspection.*

CASE OF ROSHUN ALLY AND OTHERS.—SESSIONS JUDGE'S ABSTRACT OF PRISONERS PUNISHED FOR DECEMBER 1854.

CASE OF SHEIKH MAHOMED ALLY AND OTHERS.—SESSIONS JUDGE'S ABSTRACT OF PRISONERS PUNISHED FOR JANUARY 1855.

The proceedings in these cases having been called for by the Court, in consequence of a communication from the Government, have been carefully gone through by me. They represent cruelties practised by Police Officers in two different localities of the same district with the same object (to obtain the production of poison from Chamars) on the same day, *viz.*, Sunday, 29th October. In the first case we find Roshun Ally, Thannadar of Bihareegunj, arriving at a village during the night time, seizing the inhabitants of the Chamars' quarter (men and women), searching their houses, and finally, with a view of extracting poison from one Ramdehul Chamar (believed to be in his possession), tying that person's arms behind his back with cruel violence, causing him to be beaten with twigs of the castor-oil plant, and suspending him to a tree with only his toes touching the ground, with intervals of release from this torture, in order to send him to places where the unfortunate man professed his ability to point out what was sought for, but did not; the consequence of this treatment being his death the same day, apparently from its effects, combined with exhaustion and want of food. These facts are clearly in proof. The three other prisoners are Burkandauzes, who were the instruments and accomplices of the cruelty.

While this scene was enacting, Sheikh Mahomed Ally, Mohurrir, temporarily acting as Thannadar of Secunderpoor (during the absence of Syud Warris Hossun, the incumbent of the post), though he had made one previous search and found nothing, proceeded again to institute an enquiry regarding alleged poison in the possession of Kodge Chamar, and aided by three men, Burkandauzes of the Thanna, beat the miserable man cruelly with bamboo sticks—treatment which resulted in his death. The body was promptly disposed of by being thrown into the river, but it is in evidence that it was covered with bruises, and that blood came from the nails owing to the violence used. In this case also the evidence is unimpeachable, though the acting Thannadar at first mis-reported the man's death as ensuing from an accidental fall from a tree, but the true facts were developed upon the Thannadar's return to his duty.

The Officiating Magistrate, in committing this latter case, remarks,—"it might be murder in England, but as I find that here the nature of the crime is determined by the intention, and there is no doubt that the defendants did not intend to kill the deceased, and following recent precedents, I commit for culpable homicide, which includes all forms of manslaughter short of murder." The former case was committed by the Officiating Joint Magistrate, and his proceedings revised by the Officiating Magistrate under Government Circular No. 745A, dated 25th May 1854.

I have no doubt, however, that in both these cases the commitment should have been made "murder," death being the probable consequence and result of such violence as the culprits in the absence of due authority had recourse to, and it has been held that whenever death has been caused by violence without any obvious justifying or extenuating causes, the indictment should be for murder.

Viewing the measure of punishment awarded in these cases, it appears to me that if that imposed on Mahomed Ally only, an acting Thannadar for a period, and an officer of inferior grade and responsibility, for the offence proved against him (characterized by features of certainly less severity and cruelty than that of the other case), was no more than adequate, then the sentence passed on Roshun Ally, a Thannadar of great length of service, and advanced in life, *is much too light*, regard being at the same time had to the greater atrocity of his proceedings in regard to the victim of his cruel treatment, and nothing *less*, at any rate, than the full extent of punishment competent for the Sessions Judge to award should have been inflicted on this party.

It seems not only pertinent but imperative to make some allusion to the proceedings out of which these acts of illegal violence have, contrary indeed to the meaning, and in actual opposition of the orders of the local authority, indirectly arisen. Those proceedings have no warrant in law, and any supposed exigency of circumstances could not therefore justify their adoption. The practice of chamars poisoning cattle for their hides, &c., being found to be of wide prevalence in the Azimgurh District, the Acting Joint Magistrate (Mr. Box), on the 1st September, addressed a proceeding to his local superior, reciting the facts, and asking whether, in the event of the complaint of an aggrieved party, the Police could interfere or not. Referring to Sections 12 and 13, Regulation XX, 1817, he thought this offence was not within the cognizance of a Darogah, and that complaints should be referred to the Criminal Court, where

parties found guilty might be punished for misdemeanour, under the heading of schedule attached to circular order No. 36, dated 11th April 1850, cited in the margin, and the sufferer might likewise sue for damages in the Civil Court. The Acting Magistrate, on the 2nd September, replied that he thought the offence to be of the nature of theft by administering poison, and that the Police ought to interfere, as the only means of promptly reaching the crime and avoiding the delay of a reference to the Criminal Court.

AZIMGURH. M. Smith, Esq.

Destruction or injury of property or cattle, wanton.

A proceeding of the Officiating Magistrate, dated 12th October, adopts and enlarges upon this view, and gives a general direction and injunction to all the Tehseeldars and Thannadars, till further orders, immediately on hearing of cases of poisoning whether with complaint or without (*we durkwast ye billa durkwast*), to engage in enquiry, and as far as possible discover the facts, and apprehend the guilty parties. On the same date the Officiating Magistrate issued an order upon a petition of Roshun Ally, Thannadar of Bihareegunj (reporting his proceedings in a case of the kind), fining him Rs. 5, and directing that his name be entered in the bad character book, with admonition for having sent the Jemadar instead of proceeding himself from his post for the purpose of enquiring. On the 25th October the Officiating Magistrate recorded a proceeding at considerable length, warning the Tehseeldar of Nizamabad and the other Police Officers against using any undue means of influence to procure confession, and laying down rules of conduct conceived in a very proper spirit, supposing the procedure itself to have been legal.

But this cannot be considered to be the case; the offence is clearly a misdemeanour, and as such, according to the rules in force and the construction of the law, could not be proceeded against except on the prosecution of an aggrieved party, and the general authority and order given by the Magistrate to the District Police to enter on a wholesale investigation, and to arrest of their own motion, were in my opinion quite illegal, besides the dangerous latitude of action thus given to them, so likely to be abused. The Officiating Magistrate should not have felt his own authority sufficient for solution of the question proposed by his inferior in a matter of so great moment, but should have referred it to the Sessions Judge. The offence is provided for in paragraph 406 of the Penal Code, and classed under that kind of offence against property designated "mischief." "Whoever commits or attempts to commit mischief by killing, wounding, or poisoning any animal or animals to the value of Rs. 10 or upwards, shall be punished with imprisonment of either description for a term which may extend to three years, or fine, or both." A movement of this kind, however, laudably directed against the discovery and repression of a frightful social evil must, unless kept within strict legal bounds, stimulate into dangerous activity the unscrupulous materials of which a Police agency is made up, and afford scope for acts of a worse character than the offences they profess to remedy.

From H. W. DASHWOOD, Esq., *Offg. Registrar to the Nizamut Adawlut, North-Western Provinces, to* S. J. BECHER, Esq., *Sessions Judge, Azimgurh,*—(*No.* 310, *dated* 16*th February* 1855).

H. W. Dashwood, Esq

NIZAMUT ADAWLUT, NORTH-WESTERN PROVINCES.
Present:
N. W. Begbie, M. SMITH, } *Judges.*
C. C. JACKSON, *Officiating Judge.*
Roshun Ally and others—culpable homicide. Sheikh Mahomed Ally and others—culpable homicide.

The Court have had under their inspection the proceedings held on two trials indicated in the margin, sent up with your letters Nos. 3 and 6, dated 13th and 30th ultimo, and they postpone for the present communicating their remarks on the measure of punishment awarded by your Court until they shall have received further particulars regarding the proceedings out of which these acts of illegal duress and violence arose; such particulars the Court desire that you will furnish as follows.

2. The Magistrate's statements 1 to 6 and 9, for October last, first exhibited, under the head of poisoning cattle for the sake of their skins, the large amount of 1,415 offences ascertained to have been committed with 698 persons under trial, of whom 27 were acquitted in that month. The November statement shows 10 new cases, and represents 758 persons in 103 cases as remaining under trial at the end of that month. It was noted by the Officiating Magistrate in their regard that the peculiarity of the crime with which they were charged, and the necessity of obtaining the orders of Government and a Futwa from Agra, had impeded the disposal of the cases, and that for the same reason they were not called upon to furnish bail. The December criminal statement exhibits the offence as poisoning cattle for the sake of their skins, and distributing arsenic for that purpose, with 1 new case, and shows 765 persons under trial, of whom 619 were convicted and punished, 45 committed, 94 acquitted, 4 died, and 3 in 1 case remained under trial when the year closed.

AZIMGURH.
H. W. Dashwood, Esq.

3. The Court are of opinion that your duty required you to have brought these facts specially to their notice immediately on their development, and that you should not have forwarded the statements for successive months without recording any remarks on so unusual a feature in the criminal administration.

4. The papers now before the Court show that the practice of chamars poisoning cattle for their hides or carcasses having been found widely prevalent in the Azimgurh District, the Acting Joint Magistrate (Mr. Box), on the 1st September last, addressed a proceeding to his immediate official superior, reciting the facts, and asking whether, in the event of the complaint of an aggrieved party, the Police could exercise interference or no. Referring to Sections 12 and 13, Regulation XX, 1817, he thought this offence was not within the cognizance of a Darogah, and that complainants should be referred to the Criminal Court, where parties found guilty might be punished for misdemeanour under the heading of schedule attached to circular order No. 36, dated 11th April 1850, cited in the margin, and the sufferer might likewise sue for damages in the Civil Court. The Acting Magistrate, on the 2nd September, replied that he thought the offence to be of the nature of theft by administering poison, and that the Police ought to interfere, as the only means of promptly reaching the crime and avoiding the delay of a reference to the Criminal Court.

Destruction or injury of property or cattle, wanton.

5. A proceeding of the Officiating Magistrate, dated 12th October, adopts and enlarges upon this view, and gives a general discretion and injunction to all the Tehseeldars and Thannadars, till further orders, immediately on hearing of cases of poisoning cattle, whether *with* or *without complaint,* to institute enquiries, and, as far as possible, discover the facts, and apprehend the guilty parties. After fining Roshun Ally Thannadar for remissness in respect to a case of the kind, the Officiating Magistrate on the 25th October recorded a long proceeding warning the Tehseeldar of Nizamabad and the other Police Officers against using an undue means or influence to procure confession, and laying down rules of conduct conceived in a judicious and proper spirit, supposing the prosecution itself to which the cautionary instructions referred to have been legal.

6. The Court observe that, besides the facts of the general authority and order given by the Magistrate to the District Police to enter upon wholesale investigations of their own motion having been irregular, and giving to them a dangerous latitude of action almost sure to be abused, the Officiating Magistrate should not have felt his own authority sufficient for a solution of the question proposed by his subordinate in a matter of so important and novel a nature, but should have referred it to your Court for the orders of the Nizamut Adawlut.

7. You will be pleased now to call upon the Acting Magistrate for a particular explanation of his view, regarding the character of the offence and the power of the Police to take cognizance of it of their own motion, with reference to the portion of the Clause 3, Section 12, Regulation XX, 1817, quoted in the margin, and under what legal warrant he regards the act in any other light than as a misdemeanour, which could not be proceeded against save on the prosecution of an aggrieved party duly made in the Criminal Court. It is noted that this offence, though provided for in the proposed Penal Code (page 406), and under the general designation of killing cattle declared a felony by the English statute law, is nowhere alluded to in the regulations or circular orders, the offence cited in the margin of my 4th paragraph having clearly no connexion with it whatever.

And from interfering in any matter which may not be expressly provided for in this or any other Regulation.

8. You are desired to add your own remarks on the report submitted by the Magistrate, and also to forward copies of the Futwa obtained by that officer, and of any instructions received in reply to the reference made to the Government in the matter. It would be likewise material to know whether, in the generality or in how many of the cases in which conviction had ensued, distinct proof was obtained of the death of the animals having been caused by *actual poison* duly traced and detected in the carcasses.

9. You are requested to state the result of the trial of 45 persons committed to the Sessions in December, the statement for January not having been yet received in this office.

S. J. Becher, Esq.

From S. J. BECHER, Esq., *Sessions Judge of Azimgurh, to* H. W. DASHWOOD, Esq., *Registrar, Nizamut Adawlut, North-Western Provinces,*—(*No.* 11, *dated* 28*th February* 1855).

In reply to your letter of the 16th ultimo, No. 197, I have the honor to forward a copy of the Officiating Magistrate's report, together with the letter of the Secretary to Government, and the Futwa of the Law Officers of the Sudder Court, in accordance with the Court's instructions conveyed in the 7th and 8th paragraphs of your letter under reply.

2. In my opinion, the Officiating Magistrate has taken an erroneous view of the law. Had he applied to me officially or verbally, as Mr. Box did, I would have done my best to set him to rights, but of Mr Campbell's zeal and endeavours to sift this very important case to the bottom and to bring the offenders to justice, I can speak with every confidence.

AZIMGURH.
S. J. Becher, Esq.

3. I am also of opinion that Mr. Campbell would have shown better judgment had he strictly followed the instructions of Government, and after punishing the majority of the offenders for a misdemeanour under the provisions of Regulation IX, 1807, have committed the instigators and principals to the Sessions under Regulation LIII of 1803 for a higher degree of punishment than it was in his power to inflict.

4. But as Mr. Campbell did not consult me, but referred the matter through the Commissioner, as Superintendent of Police, for the orders of Government, and as neither appeal had been made to me as Judge nor had any case been committed to the Sessions to enable me to judge of the nature of the crime or the legality of the Magistrate's proceedings, and knowing that the subject had been brought to the notice of the Government, I did not consider that any necessity existed for me to bring the matter specially to the notice of the Court.

5. I was also led to believe that, if any interference on my part was called for, the Sudder Court, on an examination of the monthly returns for October or November to which a remark by me was appended, would have called my attention to the subject.

6. The commitment of 45 persons on several charges relating to this case in December last was cancelled by me on the 16th January for several irregularities, as observed in my remarks on the trial and fully detailed in my vernacular proceedings of the same date, copies of which are herewith submitted.

7. In returning the case to the Magistrate, I give him the option of re-committing the case in a proper form, and it was then my intention to have brought the matter to the notice of the Court, but as the Magistrate did not re-commit, but disposed of the whole offenders himself, that opportunity was not afforded me.

8. My remarks have not been submitted to the Court in the commitment in question, as under the Court's circular of 14th January 1852 the necessity of so doing no longer exists.

9. I must beg the Court to pardon any omissions in this report, as the state of my health precludes my applying myself to my duties efficiently, and I am in consequence about to avail myself in a day or two of the leave granted me by Government to proceed to Europe on medical certificate.

Remarks by the Sessions Judge in the case of Jakhooa and 44 *others, charged with poisoning cattle, &c., &c.*

It is with much reluctance that I feel myself obliged to cancel this commitment after the great pains the Officiating Magistrate has evidently taken in this peculiar and important case, and to remand the case to the Officiating Magistrate, but the various and serious irregularities fully detailed in my proceedings of this date render such a measure imperative, and I am also constrained to record my opinion of the Officiating Magistrate having shown a want of judgment and a knowledge of the rules of practice in making the commitment in its present state. He would, I consider, have done better had he confined the commitment to the principal offenders, as directed by the order of Government, and have punished himself the lesser offenders in these as in other cases already tried and disposed of.

From G. CAMPBELL, Esq., *Offg. Magistrate of Azimgurh, to the Sessions Judge of Azimgurh,*— (*dated 26th February* 1855). G. Campbell, Esq.

I have the honor to acknowledge and reply to your letter No. 34 of the 22nd instant, with enclosures, from the Sudder Nizamut Adawlut, on the subject of the cases of poisoning cattle. I regret that, being at present forbidden the use of my eyes, I am unable to refer to the voluminous correspondence and papers connected with this subject, but I do not delay to submit the observations which occur to me.

2. I regret my view of the law under which I acted. I have simply to state that in my opinion the case was one in which law was altogether absent, and that being so, I conceived it to be my duty to take the measures which seemed to me to be necessary for the safety of the public. I was of the opinion (which is now recorded by the Court) that the crime noted in the margin is totally different from that under report. I found that acts perpetrated by the most dangerous of all weapons, and which cannot but be considered most heinously criminal in any civilized community, were of frightfully frequent occurrence. An opportunity of laying bare a vast criminal system and preventing its occurrence in future had occurred, and did not admit of delay or reference. The law being silent, I thought that I might reasonably be guided by analogy in determining the character of the crime, and felt convinced that any law taking notice of it must treat it as a serious felony, as in fact the Court observe, that it is treated by the English law and the Indian Penal Code. It was therefore that I took

Wantonly or maliciously killing cattle.

AZIMGURH. G. Campbell, Esq.

upon myself the responsibility of authorizing the Police to act for that time as in cases of serious felony, and I reported to my executive superiors that I had done so. I in fact acted in the matter very much as if the town had been on fire, and I had ordered certain measures to be taken without previously referring the question whether any positive law empowered me to do so. It will be remembered that as Magistrate of the District I was not only a purely Judicial Officer, not merely required to declare the law as between prosecutor and defendant, but was charged with the safety of the public bound to obey the law, but also I believe in the absence or silence of law bound to supply the place of law and act on an emergency. I lost no time in reporting all that occurred, and I should have sooner referred the legal question for the consideration of the highest judicial authority had I not received directions from the Executive Government and been instructed to proceed against the mass of the offenders in my own Court as for a simple misdemeanour. I committed a large number of offenders on a variety of charges with a view to obtain an authoritative exposition of the law. But finding it to be your opinion that the law must be ascertained previous to a reference to the Nizamut Adawlut, and despairing of uniformity of opinion in regard to very complicated and uncertain matters of form, I acted under the advice of the Superintendent of Police in dealing with the offenders whose commitment had been quashed by you. I have therefore decided the whole of the cases, and reported the whole matter, inviting such judicial review as may be deemed expedient.

3. With regard to the allusion of the Court to the wholesale nature of the investigations into which the Police were directed to enter, I venture to observe that the investigations only became extended and wholesale subsequently to the issue of the orders referred to. At that time I had evidence leading me to believe that the crime had been frightfully common, but wholesale discoveries and investigations had not taken place. On the contrary, the isolated cases which had been discovered had generally been slurred over without sufficient investigation, and it was very necessary to urge the Police to increased activity. I did no more than authorize and urge them to act as the Regulations required them to act in the investigation of other serious felonies. It will be observed that the order was one of a temporary character. On the 12th October, before wholesale discoveries were made, it was issued. On the 25th October strong cautionary orders were circulated, and on the 27th idem the investigations having then assumed a wholesale character, counter orders restraining the Police and prohibiting the further general extension of the investigation were issued. It will also be, I hope, remembered that if such orders may be occasionally abused as in the present instance, it was only by the issue of the order now commented on that a vast system of crime was discovered, and that great uses cannot fairly be judged only by exceptional abuses.

4. In reply to the Court's enquiry regarding the evidence of death by poison traced in the carcasses of dead animals, I have the honor to state that the difficulty of obtaining an analysis of the contents of bodies is very great, as the Civil Surgeon has not the means of, and declines attempting, an analysis. I have therefore not attempted to exhume and send to the Chemical Examiner at Calcutta the bodies of the dead animals, but in the several instances in which defendants had been detected administering to cattle substances supposed to contain poison, the substances were sent to Calcutta, and in every instance were found to contain large quantities of arsenic. In the other cases, evidence of the circumstances attending the death of the animals was carefully recorded, and punishment was only inflicted in cases in which all the symptoms of death by arsenic, that is of a peculiar violent inflammation of the stomach, corresponding to the evidence and the confessions, were shown to have occurred. The pure arsenic found in large quantities in the houses of the offenders is also present as corroborative testimony.

5. I enclose copy of Futwa.

6. In compliance with the order of the Sudder Nizamut, I also enclose copy of the Government instructions under which I acted in disposing of these cases, being Mr. Muir's letter No. 2235A of 6th November 1854.

Notes recorded by the Court.

M. Smith, Esq.

The Officiating Magistrate has misquoted the Court's remark. They did not say cattle killing was treated as a serious felony by the "English Law and the Penal Code." They observed it was provided for by the latter, which is the case under the general sub-division of offences against property called *mischief*, and Clause 406 of the Code evidently views it as a misdemeanour. In the Indian Law Commissioners' "Report on the Penal Code," dated 23rd July 1846, paragraphs 612, 613, they hold (in reference to a doubt expressed on the point) that poisoning cattle, even under Rs. 5, will fall under the definition of the Code, and Clause 399 is general and includes the destruction or injury of any animal, being property, by any means by which it was intended to cause wrongful loss to any party, and of course by means of poisoning, and that it would be punishable according to the value, either under Clause 400, 401, 402, or 406.

AZIMGURH.

It will, however, be said that the furtive intention, *viz.*, poisoning *for the sake of hides*, is here not contemplated, and that such element would bring the offence under felony, as is provided for by the English statute law, see "Archibald's Pleading and Evidence in Criminal Cases," page 280,—"or shall wilfully kill any such cattle with intent to steal the carcass or skin or any part of the cattle so killed, every such offender shall be guilty of felony," &c. But the declaration of the Futwa that this offence is visitable with discretionary punishment by *Tazeer* does not appear necessarily to constitute it a heinous offence which the Police would be competent to investigate and send on their own authority. The preamble to Regulation LIII, 1803, details the provisions of the Mahomedan Law regarding a sentence of discretionary punishment under the several denominations of *Tazeer*, *Akolbut* and *Seeasut*, with the several kinds of cases to which they apply, both of heinous and a non-heinous kind. M. Smith, Esq.

Now, looking at precedents, the Calcutta Nizamut Adawlut printed Reports present one case (9th August 1851, *Bukus* and other chamars) in which the crime found was "maliciously killing cattle belonging to prosecutor with intent to steal their hides." The case was tried by the Sessions Judge of Sarun, with the aid of a Law Officer, who convicted. The sentence (upheld in appeal by the Court) was two years' imprisonment each without irons, and fine of Rs. 10 (in lieu of labor), with a fine of Rs. 25 under Act XVI, 1850, for reimbursement to the owner. Here it was clearly treated as a misdemeanour in spite of the furtive intent charged, and not as a felonious act. I hardly see how the supposed or presumed furtive intent could be held to bring such an act under a felonious interpretation. For instance, a common offence punished by the Magistrate under Section 19, Regulation IX, 1807, is entering a house with intent to steal, but it is dealt with as a misdemeanour. I am not prepared to concur with the Officiating Magistrate of Azimgurh, therefore, that this offence, however grave a social evil, can be viewed as a felony under the Regulations, or as a serious crime according to the Mahomedan Law.

20th March 1855.

I consider that the crime is one of a novel character, by which I mean not provided for by any existing law on the subject, and calls for legislative interference. The crime of poisoning cattle for the sake of their hides is in my view of a much more serious character than ordinary theft, for the latter crime injures only the individual whose bullock or buffalo is stolen; another person gains by his loss; the animal continues in existence: whereas by the crime of poisoning or otherwise killing cattle, a serious injury is inflicted on the country generally. It would be difficult too to deal with such cases by the ordinary laws for theft, as the penalty awardable depends upon the *value of the property stolen*. In such a case the thing stolen or sought to be stolen is the *hide*, not the animal itself. It must therefore, if regarded as a theft at all, be viewed as a very petty one, *viz.*, under the value of Rs. 10, for which a corresponding slight punishment only could be awarded. Further, under this view, the operations of Regulation II of 1832 would impede the operations of the Police without a written petition praying for the apprehension and punishment of the offenders; the Police would not be justified in interference. I quite agree with Mr. Smith that the offence cannot be regarded as one of a heinous character under Mahomedan Law, simply because it is declared punishable by *Tazeer*, which includes misdemeanour and trivial offences also. The case quoted by Mr. Smith is exactly in point, and tends to show that the crime is not unknown in Bengal, and, perhaps, the extensive mortality amongst cattle, which is not infrequently heard of, may sometimes have been owing to this cause, or the occasion of an actual murrain may have been taken advantage of to practise this crime with impunity. The fact of its having been found necessary in England to enact a special law for the punishment of the offence sufficiently shows either that the existing laws were deemed not sufficiently stringent or to be applicable to the case, and I think that the subject should be brought under the notice of the Legislative Council, with a view to the enactment of a special law imposing very severe penalties on such offenders. N. W. Begbie, Esq.

With reference to the two cases of culpable homicide connected with this subject, I am of opinion that both commitments should have been for *wilful murder*, and the sentences which have been passed on both the Thannadars are altogether inadequate to their criminality. In a similar case lately referred by the Sessions Judge of Goruckpore, in which the prisoners (Burkundaazes) were properly committed for wilful murder, I sentenced one to 14 years' and the other to 7 years' imprisonment with labor in irons; and in a case from Saharunpore tried by me last year, in which the culpable homicide was not held to be proved, I sentenced the prisoner (a Tehseeldar) to four years' imprisonment, and I see no reason to think that these sentences were too severe.

23rd March 1855.

The Futwa has declared that persons convicted of the crime of destroying cattle for the sake of their hides are liable to discretionary punishment by *Tazeer*; it has consequently equal claims to be considered a heinous offence with many others not specially provided for by the Regulations, child-stealing, for instance, but for which some penalties are constantly awarded, and of which the Police are authorized to take notice. It has only lately been ruled unanimously by this Court that the value of stolen property shall, in accordance with the English C. C. Jackson, Esq.

AZIMGURH.
C. C. Jackson, Esq.

statute law, with regard to valuable securities, be estimated at its fictitious value to the party robbed, not at its actual intrinsic value to the thief or another party; but the opinion arrived at by the majority of the Court in this matter appears to be at direct variance with the above-mentioned rule in determining the value of the stolen property, as that of the hide of the animal which has been maliciously destroyed to facilitate its appropriation. I consider the offence liable to the penalties prescribed for cattle-stealing, and that they may consequently be enhanced in accordance with the value of the animals destroyed to effect that appropriation, as also in consequence of repeated convictions of the offence.

Whether the offence amounts to cattle-stealing in consequence of the furtive appropriation of the hide, or even malice by destroying a valuable animal for the purpose of obtaining the hide by any other means than theft, I think, under the view taken of it by the Mahomedan Law Officer, it may be considered of a heinous nature, and that the Police are consequently authorized by Regulation XX, 1817, to institute enquiries regarding it and apprehend the offenders, and that persons convicted may be punished at the discretion of this Court. Mr Muir, in acknowledging this correspondence (No. 847A, dated 24th April 1855), states that the Lieutenant Governor thinks that the legal question is one of much importance, on which it would be very desirable that the views of the Presidency Court should be ascertained.

On this the following correspondence ensues :—

Extract from the Proceedings of the Hon'ble the Lieutenant Governor of the North-Western Provinces in the Criminal Branch of the Judicial Department, under date the 14*th August* 1855.

H. W. Dashwood, Esq. *From* H. W. DASHWOOD, Esq., *Officiating Registrar to the Court of Sudder Dewanny Adawlut, North-Western Provinces, to* W. MUIR, Esq., *Secretary to the Government, North-Western Provinces,—(No.* 940, *dated the* 20*th July* 1865).

NIZAMUT ADAWLUT, NORTH-WESTERN PROVINCES.
Present.
N. W. Begbie, Esq., and M. Smith, Esq. } *Judges.*

With reference to your letter No. 847 A, dated 24th April last, the Court direct me to forward, for the information of His Honor the Lieutenant Governor, copies of a letter and its annexures, from the Registrar of the Nizamut Adawlut, Fort William, No. 544, dated the 29th ultimo.

2. His Honor will observe that the majority of the two Courts are of opinion that the offence of cattle poisoning for the sake of their hides does not come within what are called in the Regulations "heinous offences," and is therefore not within the competence of the Police primarily; the crime, however, is of so grave a character, and in nature so hurtful to the interests of an agricultural community like the people of India, that the majority of the two Courts think it advisable that a legislative enactment of some such tenor as the draft of a Bill hereto appended should be passed, enabling the Police to take cognizance of it, and empowering the Magistrate to award a punishment proportionable to the heinousness of the offence to the extent of his own legal competency, or, in cases of an aggravated nature calling for a severe punishment, to commit the accused parties to the Sessions Court.

C. T. Buckland, Esq. *From* C. T. BUCKLAND, Esq., *Registrar of the Court of Nizamut Adawlut, to* H. W. DASHWOOD, Esq., *Officiating Registrar of the Court of Nizamut Adawlut, North-Western Provinces,—(No.* 544, *dated Fort William, the* 29*th June* 1855).

NIZAMUT ADAWLUT.
Present.
A. Dick, Esq.
Sir R. Barlow, Bart.
H. T. Raikes, Esq.
B. J. Colvin, Esq.
J. H. Patton, Esq. } *Judges.*

I am directed by the Court to acknowledge the receipt of your letter No. 528, dated 1st May, with its enclosures, and in reply to submit the following observations for the consideration of the North-Western Court.

2. Sir Robert Barlow and Messrs. Raikes and Patton are of opinion that the offence of poisoning cattle for the sake of their hides does not come within what are called in the Regulations "heinous offences" by Section 25, Regulation XX, 1817, and the statement of heinous offences, Form No. 4, annexed to that law, and is therefore not within the competence of the Police primarily, but they consider the crime to be of so grave a character that a legislative enactment should be passed enabling the Police to take cognizance of it, and empowering the Magistrate to award punishment equal to that which he can inflict for cattle stealing.

3. Messrs. Dick and Colvin are on the contrary of opinion that the offence is cognizable by the Police, as it does not come under any of the classes of cases especially excepted in Section 12, Regulation XX of 1817, from their interference.

They consider it to be in its nature a heinous offence; provision is therefore made for the conduct of the Police regarding it in the terms of Section 13 of the above law, by which they are authorized to enquire into all heinous offences not specially excepted by that Regulation. AZIMGARH

4. Copies of the minutes recorded by the Judges are herewith forwarded.

Minutes recorded by the Judges.

There can be no doubt that the poisoning of cattle is a heinous offence in its very nature. It is not excepted by Regulation XX, 1817, from the cognizance of the Police Daroga. It is an offence punishable at discretion to the utmost extent, as shown by the Futwa (Tazeer), under the Mahomedan law. In cases such as the one under consideration, where no special provision is made in the Regulations, the Court are to proceed as directed in Clause 7, Section 2, Regulation LIII, 1803. A. Dick, Esq.

A. DICK,

The 11th June 1855. *Judge.*

The offence of "killing cattle for their hides" is not included in Statement No. 1, Part I, nor is it in the list of miscellaneous offences, see circular order No. 36, dated the 11th April 1850. A Futwa has declared it punishable by Mahomedan law; it is also a felony by English law, and should have a place in our catalogue of offences. Strictly speaking, it cannot be called theft, and is not a heinous crime by our Regulation Law. It is not theft in the legal acceptation of the term, but in another and more familiar sense, it is a secret spoliation of property of another nature, and so far a furtive appropriation. The wealth of the agricultural classes in this country consists chiefly in cattle. They are constantly exposed, and subject to be carried off by such ill-disposed persons as gain their livelihood by stealing them; hence cattle-stealing is considered by our law a heinous offence, and the penalties attached to it are enhanced punishment. Sir Robert Barlow & J. H. Patton, Esq.

Those who kill cattle for their hides are not guilty of taking them alive. The animal is poisoned, it dies, the carcass is thrown into the river or upon the skirts of the village, or a spot usually set apart for the purpose, and is shared by the dogs and vultures with the chamars; the proprietor no longer cares for or values the dead animal.

Though the offence under consideration does not come within what are called in our law "heinous offences," and is not therefore within the competence of the Police primarily, I think that its great prevalence and the actual loss sustained must be so considerable that a short enactment should be passed extending the powers vested in the Police to take cognizance of "heinous offences" to cases of this nature. It would also be advisable to enlarge the jurisdiction of Magistrates by specific legislation, on conviction of the offence, to the extent of punishment now awarded by them in cases of cattle-stealing.

I may observe that the offence is by no means unknown in some of the districts under this Court, and probably of frequent occurrence though not often brought to light.

The 11th June 1855. R. BARLOW,

The 27th June 1855. J. H. PATTON,

Judges.

I agree with Sir R. Barlow that the matter should be taken up by the legislature. H. T. Raikes, Esq.

The 25th June 1855. H. T. RAIKES,

Judge.

I consider that the offence of killing cattle for their hides is cognizable by Police Officers. The offences not cognizable by them are specified in Section 12, Regulation XX, 1817. There is no division of offences cognizable and not cognizable into classes of petty or heinous offences, but the excepted offences are described by name, and the above offence not being expected, is therefore, in my opinion, cognizable. B. J. Colvin, Esq.

It is moreover an offence from its very character of a heinous nature, so as to fall within the scope of the words or "other heinous offences" in Section 13, Regulation XX, 1817.

The 27th June 1855. B. J. COLVIN,

Judge.

DRAFT BILL.

A Bill for the prosecution of parties charged with the malicious and wanton destruction of cattle, and for the punishment of that offence.

Whereas it is expedient to make special provision for the cognizance by the Police of the offence of maliciously or wantonly destroying cattle, and for the due punishment thereof; It is enacted as follows:—

I. Nothing in Regulation XX, 1817, or in any other enactment, shall be so construed as to prohibit any Daroga or other Police Officer regularly empowered, upon charge or information

AZIMGURH. duly received, from taking cognizance of the offence mentioned in the preamble of this Bill, and proceeding therein in the same way as is provided in respect to heinous offences by Clause 1, Section 13, Regulation XX of 1817.

II. All persons who shall be guilty of the offence hereinbefore mentioned shall be punishable, on conviction, by a sentence of imprisonment not exceeding 7 years in banishment with or without labor or irons. Provided that it shall not be lawful for a Magistrate to impose any sentence of imprisonment under this Act exceeding the term of 3 years. In any case in which the Magistrate considers this punishment insufficient for the offence, he may commit the prisoner for trial before the Sessions Court.

The following letter is written to the Legislative Member of Council, North-Western Provinces:—

W. Muir, Esq. *From* W. MUIR, Esq., *Secretary to the Government, North-Western Provinces, to* C. ALLEN, Esq., *Member of the Legislative Council,*—(*No.* 1723*A, dated* 14*th August* 1855).

I am directed by the Hon'ble the Lieutenant Governor to transmit to you the accompanying copy of a letter from the Officiating Registrar of the Court of Sudder Dewanny Adawlut, No. 940, dated 20th ultimo, and of its enclosures.

2. It will be observed that a majority of the Judges both in the Calcutta and Agra Court have ruled that the crime of poisoning cattle, though with a view to the wrongful appropriation of their hides, is not an offence coming under the legal denomination of offences of a "heinous nature," and is not therefore cognizable by the Police, but within, only for direct complaint or charge to the Magistrate. Both Courts are, however, of opinion that the offence is one of so serious a description, and affects so closely the interests of the agricultural population, that a special enactment should be passed authorizing the Police to deal with it according to the procedure upon information of heinous offences under Regulation XX of 1817.

3. The circumstances of the crime are somewhat peculiar. On the death of cattle, the low caste Chowkeedars of the village are allowed by the usage of the country to take the hides, and cattle are therefore destroyed, by poison or otherwise, so that the hides may be obtained in that manner. The taking of the hides is open and with consent, though the intent and means have been criminal; the act is consequently not furtive, and cannot be proceeded against according to the law regarding theft. Yet it is one even of a more widely injurious nature than any ordinary theft: an experience in some districts, and especially recently in Azimgurh where a wide-spread conspiracy for the purpose was detected, has shown that the most active measures are indispensable for its repression.

4. The draft annexed to this letter is proposed by the Lieutenant Governor for your consideration, as that in which a Bill on the subject may perhaps most briefly and suitably be expressed. Its terms are not confined to merely the malicious intent which may not be quite clear and certain, and the case of destruction by poisoning is not specifically mentioned, but left to be considered as a circumstance in aggravation when on any trial there may be convincing evidence of the use of poison.

5. Should you see no objection, you are requested to bring the draft, with any verbal modifications that you may think advisable, before the Legislative Council.

DRAFT BILL.

A Bill for the prosecution of parties charged with the malicious or wanton destruction of cattle, and for the punishment of that offence.

Whereas it is expedient to make special provision for the cognizance by the Police of the offence of maliciously or wantonly destroying cattle, and for the due punishment thereof:—

I. It is hereby enacted that the offence specified in the preamble of this Act should be considered a crime of a heinous nature, to be dealt with as provided in respect of such crimes in Regulation XX, 1817, or in other laws in force.

II. Upon conviction of the aforesaid offence, it shall be lawful for a Magistrate or officer exercising the powers of a Magistrate to pass sentence upon the offender to the extent of the powers vested in him upon a conviction for theft, or in cases in which he may consider a graver punishment necessary, to commit such offender to the Sessions Court.

Here the correspondence ends: the Act printed at page 645 appears to have been the result.

Abstract of a report by J. SLADEN, Esq., *Magistrate of Azimgurh,—(No. 92, dated 26th July* 1870).

AZIMGURH. J. Sladen, Esq.

Forwards a brief abstract of all cases of cattle poisoning which were instituted from June 1869 to June 1870. Twenty-four convictions were obtained in 18 cases: in 12 cases the defendants confessed. The usual *modes of operation* in the district are,—putting arsenical powder wrapped up in leaves into the *naud* from which the animal feeds, or throwing it before cattle when grazing. The *poisoners* are generally chamars belonging to the village, who are entitled by custom to take the flesh and hides of dead cattle. The *poison is obtained* either by the chamars themselves from Benares or supplied by the servants of hide-dealers. The offence was particularly rife in August, September; and October 1869, when disease prevailed extensively among cattle. The inference is either that the chamars take advantage of the existence of disease to shield their operations, or that deaths by disease are attributed to poisoning and charges trumped up against the chamars in consequence. A former Magistrate, Mr. Moore, directed the hides to be cut up in suspicious cases and the carcass to be buried. This measure was apparently followed by beneficial results. Is of opinion that the punishment of such cases would be facilitated by the crime being made cognizable by the Police, and by furnishing Civil Surgeons with chemical apparatus for analyzing and detecting the poison. The following table exhibits the particulars of the 24 cases as far as they are given.

Captain C. A. Dodd, in his "note on cattle poisoning," states that 69 cases were instituted in the years 1868 and 1869 for cattle poisoning and 31 persons convicted.

Abstract of 24 cases of Cattle Poisoning in Azimgurh District.

No. of case.	No. of accused.	Caste.	Crime and its circumstances.	Nature of evidence adduced.	Nature of poison.	Whence obtained.	Decision of Court.
1	Several.	Chamar.	Poisoning cattle ...	...	Not stated	...	Charge withdrawn.
2	2	Do.	Attempt to poison cattle; threw before them poison done up in castor-oil leaves.	Chemical Examiner reported that the substance forwarded was common salt.	...	...	Released.
3	2	Do.	Poisoning cattle; administering poison done up in sugar-cane leaves.	...	Not stated	From other chamars.	1 year's imprisonment.
4	1	Do.	Caused death of a bullock by administering poison to it while it was grazing.	...	Do.	...	Released; charge supposed to have been made on suspicion.
5	1	Do.	Administered a substance done up in grass to a buffalo.	Seized in the act ...	Do.	...	2 years' rigorous imprisonment.
6.	3	Do.	Attempt to poison a buffalo.	Confessed ...	Do.	From a chamar who had come to buy hides.	1 year and 3 months' imprisonment each.
7	2	Do.	Attempt to poison cattle by putting poison in the *naud*	Not stated ...	Do.	...	6 months' imprisonment each.
8	2	Do.	Same case as No. 3.	...	Do.	...	One man sentenced to 2 years' imprisonment and one released.
9	1	Do.	Attempt to poison a bullock.	...	Do.	From another chamar.	6 months imprisonment.
10	1	Do.	Attempt to poison cattle by flinging before them poison put up in leaves.	Confessed ...	Do.	Do.	20 stripes.
11	1	Do.	Ditto ...	Chemical Examiner reported that the substance forwarded did not contain poison.	...	...	Released.
12	2	Do.	Attempt to poison cattle.	Defendants found among cattle, seized and searched, white powder found on them.	Arsenic ...	...	6 months' imprisonment each.

AZIMGURH.
J. Sladen, Esq.

Abstract of Cattle Poisoning,—continued.

No. of case.	No. of accused.	Caste.	Crime and its circumstances.	Nature of evidence adduced.	Nature of poison.	Whence obtained.	Decision of Court
13	1	Chamar	Killed a cow ...	...	...	...	10 stripes.
14	2	Do.	Attemped to poison cattle by throwing poison before them in castor-oil leaves.	Confessed; poison discovered by Chemical Examiner.	Not stated	...	One man sentenced to 2 years' imprisonment.
15	2	Chamarin	Attempt to poison cattle.	Seized while giving something to an ox. Poison was found.	Do.	...	One defendant sentenced to 2 months' rigorous imprisonment.
16	1	Chamar	Attempt to poison cattle by throwing poison before them put up in leaves.	...	Do.	...	One year's imprisonment.
17	1	Do.	Ditto ...	Confessed ...	Do.	...	3 months' imprisonment.
18	1	Do.	Attempt to poison them by administering poison enclosed in corn stalks.	Evidence unsatisfactory.	Do.	...	Released.
19	1	Chamarin	Attempt to poison an ox by throwing poison into the *naud*.	Confessed ...	Do.	...	One month's rigorous imprisonment.
20	1	Do.	Poisoned a bullock by throwing poisoned grass into the *naud*.	...	Do.	...	6 months rigorous imprisonment.
21	4	Chamar	Killed a cow by giving poison put in leaves.	One man confessed and implicated the other three.	Do.	...	2 years' rigorous imprisonment each.
22	1	Do.	Killed an ox by putting poison in the *naud*.	...	Do.	...	2 years' imprisonment.
23	1	Do.	Killed an ox by giving poison contained in castor-oil leaves.	Evidence unsatisfactory. Chemical Examiner reported that the substance did not contain poison.	...	...	Released.
24	1	Do.	Attempt to poison by giving poison put up in pea leaves.	Confessed ...	Not stated	...	6 months' imprisonment.

A. J. Lawrence, Esq. *Report by* A. J. LAWRENCE, Esq., *Officiating Magistrate, Benares*,—(*No.* 80, *dated* 19*th July* 1870).

Forwards a list of 24 cases of cattle poisoning instituted during the 12 months preceding date of letter. There were 44 defendants, all chamars—among them 2 boys and 10 females; 35 were punished. The sentences varied from 10 stripes up to 2 years, in many cases with fine; 9 were acquitted. The circumstances of all the cases (not detailed) are said to have been the same in all cases.

Captain C. A. Dodd, in his "Note on cattle poisoning," states that the number of cases of cattle poisoning in the Benares District in the years 1868 and 1869 were 18, and the convictions 37.

GHAZEEPORE.
W. Oldham, Esq.

Report by W. OLDHAM, Esq., *Officiating Magistrate, Ghazeepore*,—(*No.* 496, *dated* 3*rd December* 1869).

This letter is addressed to the Judge of Ghazeepore. Refers to the cases of three chamars from whom security for good behaviour was taken under Section 296, Indian Code of Criminal Procedure. Explains that accused were proved to be habitual cattle poisoners. The circumstances under which this procedure was adopted were, that cattle poisoning, always a common crime in this district, became frightfully prevalent at the end of 1868. It was ascertained that the traders in hides supplied arsenic to the village leather dressers; that by village custom, the hides of all cattle dying are the perquisite of certain chamars in every village; that these persons

never themselves administered the poison but employed little children, wandering beggars, &c., to do so, whose punishment would be a matter of indifference to them. There was no hope thus of staying the crime by punishing detected offenders, and in the villages where the greatest number of deaths from poisoning occurred, security was required from those chamars who, by village custom, had removed the hides. The most influential chamars were sent for and informed that those who received the hides were liable to be proceeded against as bad characters, if they were cognizant of the poisoning. These measures had a "marked and immediate effect in diminishing the crime." Is of opinion that a law should be made declaring that the possession of poison which cannot be accounted for is liable to punishment.

GHAZEEPORE. W. Oldham, Esq.

Report by J. A. CRAWFORD, Esq., *Collector of Customs, Calcutta,*—(*No.* 1100, *dated* 14*th September* 1869). J. A. Crawford, Esq.

Forwards a statement of the importation of arsenic and exportation of hides for the last 8 years.

This statement is as follows: corresponding statements have been obtained from Madras, Bombay, and Kurrachee and incorporated in this table.

Annual Importation of Arsenic.

YEAR.	CALCUTTA.		MADRAS.		BOMBAY.		KURRACHEE.		TOTAL.		REMARKS.
	Cwts.	Value.	Cwts.	Value.	Cwts.	Value.	Cwts.	Value.	Cwts.	Value.	
		Rs.		Rs.		Rs.		Rs.		Rs.	
1860-61	*	*	175	3,469	270	7,621	6	196	451	11,286	* Not recorded.
1861-62	944	19,500	75	1,820	319	7,980	6	192	1,344	29,492	
1862-63	533	13,357	235	4,716	818	19,652	34	1,877	1,620	39,602	
1863-64	465	11,528	59	1,477	367	9,487	113	3,873	1,004	26,365	
1864-65	11,703	68,216	269	5,125	170	4,593	7	197	12,149	78,131	
1865-66	757	18,929	104	2,019	1,416	33,258	72	1,526	2,349	55,732	
1866-67	2,245	57,975	360	6,356	542	13,432	45	1,205	3,192	78,968	
1867-68	516	10,286	24	609	*	*	9	251	549	11,146	
1868-69	2,035	49,599	121	3,398	466	11,652	75	1,670	2,697	66,319	
1869-70	638½	13,717	140	3,502	525	11,785	18	490	1,321½	29,494	

Value of Hides and Skins exported annually.

YEAR.	CALCUTTA.	MADRAS.	BOMBAY.	KURRACHEE.	TOTAL VALUE.	REMARKS.
	Rs.	Rs.	Rs.	Rs.	Rs.	
1860-61 ...	*	15,37,468	2,57,498	85,578	18,80,544	* Not recorded.
1861-62 ...	64,84,399	12,06,715	1,94,451	1,37,930	80,23,495	
1862-63 ...	73,74,900	16,99,782	3,15,345	49,031	94,39,058	
1863-64 ...	73,27,733	17,94,739	1,48,046	37,470	93,07,988	
1864-65 ...	51,01,743	16,98,442	1,14,057	37,210	69,51,452	
1865-66 ...	4,06,211	17,42,478	1,23,892	56,762	23,29,343	
1866-67 ...	38,66,136	20,09,933	1,04,841	69,792	60,50,702	
1867-68 ...	66,42,584	26,33,666	1,06,014	50,706	94,32,970	
1868-69 ...	94,94,749	28,15,798	1,72,957	1,38,005	1,26,21,509	
1869-70 ...	1,27,53,610	31,45,761	5,00,742	3,76,682	1,67,76,795	

GHAZEEPORE.
W. Oldham, Esq.

Report by W. OLDHAM, Esq., *Magistrate of Ghazeepore,*—(*No.* 195, *dated* 25*th July* 1870).

Forwards copies of all the decisions and sentences in 47 cases of cattle poisoning which occurred during the preceding year.

These have been reduced to the following tabular form :—

Abstract of 47 *cases of Cattle Poisoning in the Ghazeepore District.*

No. of case.	No. of accused.	Caste.	Crime and circumstances of administration.	Nature of evidence adduced.	Poison found.	Whence obtained.	Decision of Court.
1	1	Chamar	Administered suttoo to a bullock.	Not stated ...	None found.	Not stated...	2 months' rigorous imprisonment.
2	1	Do. (12)	Attempted to poison a cow.	Not stated ...	Not stated...	Do. ...	2 weeks' rigorous imprisonment.
3	1	Do. ...	Bullock died 3 days after administration of grass by accused.	Civil Surgeon examined intestines and supposed that death was caused by poisoning.	Do. ...	Do. ...	6 months' rigorous imprisonment.
4	2	Do. ...	Defendants caught in the act of throwing poisoned grass before cattle in a field. The younger defendant (æt. 12) threw down the grass.	Chemical Examiner certified that grass contained poison.	Do. ...	Do. ...	1 year's rigorous imprisonment, and 6 months' rigorous imprisonment.
5	1	Do. ...	Accused threw poisoned grass before a bullock.	Many cattle had been dying in the village. Sub-Inspector poisoned a dog with grass.	Do. ...	Do. ...	1 year's rigorous imprisonment.
6	1	Do. ...	Accused confessed to an attempt to poison.	Chemical Examiner found poison.	Arsenic mixed with mercury.	Do. ...	1 year's rigorous imprisonment and Rs. 50 fine, or 6 months' more.
7	1	Do. ...	Ditto ...	Not stated ...	Not stated...	Do. ...	2 months' rigorous imprisonment.
8	2	Do. ...	Killed cattle ...	Ditto ...	Do. ...	Do. ...	1½ year's ditto.
9	1	Chamarin	Went to house of plaintiff and placed a poisoned ball in *naud* (manger.)	Chemical Examiner found poison.	Arsenic ...	Do. ...	1 month's ditto.
10	2	Chamar	Came up to plaintiff's bullock, administered a poisoned ball which proved fatal. Other defendant abetted.	Ditto ...	White arsenic mixed with jowar stalks.	Do. ...	2 years' ditto, Rs. 10 fine or 1 month more; 1 year do., Rs. 10 fine, or 1 month more.
11	1	Do. (14)	Confessed to have given poison to a buffalo.	Chemical Examiner found poison in ball and in the material obtained in the chamar's house.	White arsenic.	Another Chamar in whose house poison was found.	15 stripes.
12	2	Do. (12)	Caught administering poison to a cow.	Testimony of owner of cow.	Not stated...	Another Chamar.	15 ditto.
13	1	Not stated.	Not stated ...	No evidence ...	Do. ...	Not stated..	Case dismissed.
14	1	Chamar	Seen to administer poison to a bullock, which sickened and died.	Civil Surgeon examined intestines and certified that animal had died of irritant poisoning (probably caused by arsenic.)	Do. ...	Do. ...	1 year's rigorous imprisonment.
15	1	Do. ...	Administered poison to bullock.	Not stated ...	Do. ...	Do. ...	4 months' ditto.
16	1	Not stated.	Attempted to poison cow.	Accused confessed...	Do. ...	Do. ...	10 stripes.
17	1	Chamar	Accused threw poison mixed with suttoo before cattle.	Chemical Examiner found poison.	Arsenic ...	Do. ...	2 months' rigorous imprisonment.
18	1	Not stated.	Not stated ...	Not stated ...	Not stated...	Do. ...	6 ditto.

Abstract of Cattle Poisoning in the Ghazeepore District,—continued.

No. of case.	No. of accused.	Caste.	Crime and circumstances of administration.	Nature of evidence adduced.	Poison found.	Whence obtained.	Decision of Court.
19	2	Not stated.	The son gave poison, the father standing by.	Not stated ...	Not stated...	Not stated...	4 months' rigorous imprisonment each.
20	1	Chamar	Poisoned cattle ...	Accused confessed...	Do. ...	Do. ...	6 ditto.
21	2	Do. ...	One defendant, female, caught the horns of an ox and the other administered poison.	Complainant witnessed the transaction.	Do. ...	Do. ...	1 ditto each.
22	1	Do. ...	The accused administered poison to a cow, which died two days afterwards.	Caught in the act.	Do. ...	Do. ...	4 ditto.
23	1	Do. ...	Attempted to administer poison to a bullock.	Caught in the act. Chemical Examiner found poison.	White arsenic.	Do. ...	15 stripes.
24	1	Not stated (F)	Confessed to attempt to poison a cow.	Chemical Examiner found poison.	Do. ...	Do. ...	4 months' rigorous imprisonment.
25	1	Chamar	Poisoned a bullock.	Civil Surgeon examined intestines and stated that animal had not died of poison.	Not stated...	Do. ...	6 ditto.
26	1	Do. ...	Administered poison to a cow, which died.	Accused confessed...	Do. ...	Do. ...	6 ditto.
27	1	Do. ...	Attempted to poison a cow.	Not stated ...	Do. ...	Do. ...	2 ditto.
28	1	Do. ...	Caught in the act of administering poison.	Chemical Examiner found poison.	White arsenic.	Do. ...	5 stripes.
29	1	Do. ...	Attempted to poison	Accused confessed...	Not stated...	Do. ...	6 months' rigorous imprisonment.
30	2	Do. ...	Poisoned an ox ...	Not stated ...	Do. ...	Do. ...	6 ditto.
31	1	Chamarini	Poisoned a cow ...	Ditto ...	Do. ...	From a chamar.	6 ditto.
32	1	Do. ...	Poisoned cattle ...	Confessed ...	Do. ...	Not stated...	3 months' simple imprisonment.
33	1	Not stated (F)	Poisoned cattle ...	Ditto ...	Do. ...	Do. ...	18 months' rigorous imprisonment.
34	1	Not stated.	Mixed poison with the food of a cow, which died.	Civil Surgeon reports that the cow died of poisoning by arsenic.	Arsenic ...	Do. ...	4 ditto.
35	2	Chamar	Attempted to poison a buffalo.	Not stated ...	Not stated...	Do. ...	6 ditto.
36	1	Do. ...	Attempted to poison cattle.	Confessed ...	Do. ...	Do. ...	6 ditto.
37	2	Do. ...	Poisoned cattle ...	Not stated ...	Do. ...	Do. ...	2 years' ditto. 1 ditto.
38	1	Chamarini	Poisoned cattle ...	Ditto ...	Do. ...	Do. ...	10 months' ditto.
39	1	Do. ...	Attempted to poison cattle.	Confessed ...	Do. ...	Do. ...	1 year's simple imprisonment.
40	1	Chamar	Administered poison to a bullock, which died.	Native Doctor reports that animal died of poison.	Ditto ...	Do. ...	1 year's rigorous imprisonment. Rs. 20 fine or 1 month more.
41	2	Do. ...	Attempted to administer poison.	Chemical Examiner found poison.	Arsenic ...	Do. ...	15 stripes; the other discharged.
42	1	Not stated.	Not stated ...	Accused confessed...	Not stated...	Do. ...	10 stripes (a boy).
43	1	Chamar	Administered poison to a bullock.	Chemical Examiner found poison.	Arsenic ...	Do. ...	1 year's rigorous imprisonment.
44	1	Do. ...	Poisoned cattle ...	Accused confessed...	Not stated...	Do. ...	6 months' ditto.
45	1	Do. ...	Poisoned cattle ...	Not stated ...	Do. ...	Do. ...	6 ditto.
46	1	Do. ...	Administered poison to a bullock, which died shortly afterwards.	Caught in the act...	Do. ...	Do. ...	1 year's ditto.
47	1	Do. ...	Administered poison to cattle.	Accused confessed; Civil Surgeon certifies that death was caused by poisoning.	Do. ...	Do. ...	2 ditto.

SUMMARY OF PRECEDING TABLE.

GHAZEEPORE. W. Oldham, Esq.

The accused belonged to the chamar caste in 40 cases; in the remaining cases, 7, the caste is not stated. In 37 cases there was only one defendant, and in 10 cases two defendants were arraigned. The accused were grown up men in 41 cases, boys in 8 cases, and females in 5 cases. The crime was an attempt to poison in 17 cases and poisoning in 27; punishment varying from 10 stripes in the case of juvenile offenders and 2 years' rigorous imprisonment was awarded in every case with one exception. Proof of the substance attempted to be given being poison was furnished by the Chemical Examiner in 11 cases, and in these the poison found was arsenic. The *post-mortem* appearances noted by the Civil Surgeon indicated irritant poisoning in 3 cases, and a Native Doctor certified to the same effect in 1 case. The accused confessed guilt in 6 cases of attempt and in 7 cases of actual poisoning. In all the rest the proof apparently rested on the evidence of the owner and eye-witnesses, on the inability of the accused to prove his defence, and on the well known character and propensities of the offender. The poison is described in 2 cases as having been mixed up with *suttoo;* in 1 case as having been compounded with a salt of mercury, in 2 cases administered in grass, and in 1 case with *jowar* stems. In 1 case the Police poisoned a dog with the grass intended to be given to a bullock.

The source whence the arsenic was obtained is only stated in 1 or 2 cases, when the woman or child accused avers that the poison was obtained from a chamar, and in 1 case poison (arsenic) was discovered in the house of the chamar thus indicated. Frequent allusions are made to the prevalence of the practice of cattle poisoning in these decisions.

Captain C. A. Dodd, in his "Note on cattle poisoning," states that in 1868-69, 86 cases were instituted and 133 persons convicted in the district of Ghazeepore.

Cases of Cattle Poisoning in the Mirzapore District during the years 1868-69.

Serial Number.	Name of accused.	Caste of accused.	Occupation of accused.	Name of Pergunnah.	Name of convicting Magistrate.	Date of conviction.	Sentence.	Remarks.
1	Muttole and Bheokhee.	Chamar ...	Hurwahee...	Bhudohee ...	Mr. W. Duthoit, Joint Magistrate.	June 16, 1868	One year's rigorous imprisonment each (Section 428).	The accused in this case were seen standing near the bullock, having punched the tongue with a *sootaree* doubtless poisoned, although the nature of the poison is not specified. The convicting officer remarks that the offence is by no means uncommon in Pergunnah Bhudohee.
2	Sheopal ...	Ditto ...	Cultivation (Khetee).	Kuntit ...	Tehsildar of Mirzapore, Deputy Magistrate.	March 20, 1869	Six months' rigorous imprisonment (Section 428).	In this case one bullock was killed by poison. The accused was seen by the prosecutor placing pills containing white arsenic on the tongue of the beast.
3	Jerbundhun ...	Ditto ...	Labor, Mujdooree.	Bhudohee ...	Mr. W. Duthoit, Joint Magistrate.	July 2, „	Three months' rigorous imprisonment (Sections 428-511).	The accused in this case attempted to kill a bullock by feeding him with a *jundree* stalk previously poisoned; accused confessed that he gave the stalk to the beast, but denied that it was poisoned. The Civil Surgeon could not discover any traces of poison in the substance submitted to him for examination. The conviction appears to have been obtained chiefly on circumstantial evidence, such as the fact of accused running away when charged with the offence.
4	Sheomber and Sheodin.	Ditto ...	Mujdooree ...	Ditto ...	Ditto ...	„ 7, „	Sheomber flogged, and Sheodin 6 months' rigorous imprisonment and to pay a fine of Rs. 12, or 2 months' further imprisonment (Sections 109-428).	In this case one of the accused, Sheomber, admitted to having wetted some cloth with *mudar* juice and having administered it to the prosecutor's bullock, which died from the effect 5 *ghurries* afterwards. The other accused, Sheodin, denied having poisoned the bullock, but admitted that he had told Sheomber to administer the mudar juice as an experiment.
5	Ghoorhoo ...	Ditto ...	Cultivation	Ghorawal ...	Mr. R. T. Hobart, Joint Magistrate.	„ 13, „	Two years' rigorous imprisonment (Section 429).	The accused in this case poisoned a cow belonging to a man named Baboolal; accused fully admitted his guilt, stating that the means he employed were *goomchee* and soot, which, when mixed, he placed under the beast's tongue. He also acknowledged to having killed two beasts in the same way during the same year, and stated that his object in so doing was to get possession of the skins.
6	Punchoo ...	Ditto ...	Ditto ...	Bhudohee ...	Mr. R. J. Leeds, Joint Magistrate.	Oct. 7, „	Six months' rigorous imprisonment (Sections 511—426).	In this case the accused was found by the prosecutor in the act of administering poisonous pills wrapped up in *jowar* leaves to one of his bullocks. The pills were forwarded for examination to the Chemical Examiner and were found to consist chiefly of white arsenic.
7	Gopal and Boodhoo.	Ditto ...	Unknown ...	Ditto ...	Ditto ...	„ 12, „	Dismissed ...	Case did not come into Court by reason of non-appearance. No complaint; but the substance was forwarded to the Chemical Examiner for analysis, and was reported by him to contain white arsenic. It was administered in the form of pills.

MIRZAPORE.
Tabular statement of cases of cattle poisoning.

Cases of Cattle Poisoning in the Mirzapore District,—continued.

Serial Number.	Name of accused.	Caste of accused.	Occupation of accused.	Name of Pergunnah.	Name of convicting Magistrate.	Date of conviction.	Sentence.	REMARKS.
8	Sheodharee and Mussamut Mungya.	Chamar...	Cultivation	Bhudohee ...	Mr. R. J. Leeds, Joint Magistrate.	Oct. 20, 1869	Six weeks' rigorous imprisonment (Sections 511 and 426).	In this case the accused, mother and son, were detected endeavoring to poison some buffaloes by feeding them on pills composed chiefly of white arsenic. The male prisoner was found actually feeding the beasts, the female standing near him.
9	Buchwa ...	Ditto ...	Ditto ...	Ditto ...	Ditto ...	Nov. 5, „	Five stripes with rattan (Sections 426 and 511).	In this case the accused, a boy of about 8 or 10 years of age, was found endeavoring to poison a bullock by feeding him with pills found to contain white arsenic.
10	Mussamut Boodhia.	Ditto ...	Beggary ...	Ditto ...	Mr. W. Duthoit, Joint Magistrate.	„ 29, „	One year's rigorous imprisonment (Sections 511 and 428).	The accused was seen in the act of administering pills to the prosecutor's bullock, but his hand was arrested in time to prevent any ill effect. The pills were forwarded for examination by the Civil Surgeon, who, although he expressed his certainty that there was some poisonous substance in them, was unable to specify its nature.
11	Phuttee, Ramtahal, Rajpal, and Bulloo.	Ditto ...	Cultivation..	Ditto ...	Ditto ...	Dec. 3, „	One year's rigorous imprisonment each (Sections 511 and 428).	One of the accused, Bulloo, was seen in the act of placing in the mouth of the prosecutor's bullock some *jundree* leaves in which a poisonous substance was wrapped up, found on examination by the Chemical Examiner to contain white arsenic. The other accused were standing near, and on being discovered they all ran away.
12	Louton ...	Ditto ...	Ditto ...	Ditto ...	Ditto ...	„ 14, „	Discharged (Section 428).	Accused discharged for want of evidence. Poison appears to have been administered in grass, but the nature of the poison does not appear to have been specified, nor did it clearly appear that the prisoner was the culprit.
13	Ramdin ...	Ditto ...	Ditto ...	Ditto ...	Ditto ...	„ 30, „	Six weeks' rigorous imprisonment (Sections 511 and 490).	Accused was seen to throw something in the grass on the threshing floor where the bullock was feeding, which, on examination, turned out to be poison, so judged by the Civil Surgeon from the effects on a dog. The nature of the poison is not specified.

NOTE.—With regard to the above cases, it may be observed that of the whole number 13, comprising 20 accused persons, convictions were obtained in the case of 17. With regard—

1*st*.—To the caste of the accused, they are all without exception *Chamars*.

2*nd*.—To the occupation of the accused, in 8 cases it was that of *cultivation*, in two Hurwahee, in three Mujdooree, in two unknown, and in one beggary.

As to the way in which poison was administered the following modes may be noticed:—

1*st*.—To mix arsenic in the grass or other food which the animal may be eating.

2*nd*.—To wrap a pill of arsenical flour in jowar leaves and to stuff it into the animal's mouth.

3*rd*.—To prick cattle in the mouth with a poisoned pin (Sootar).

It may be further observed that with the exception of 2 cases occurring in Kuntit and Ghorawal all the cases without exception took place in Pergunnah Bhooilee. The Police reported 10 out of the 13 cases, and in the remaining 3 the prosecution was initiated by complaint of the parties.

JAMES SIMSON,
Officiating Magistrate.

F. C. DAUKES,
Assistant Magistrate.

Report by J. SIMSON, Esq., *Magistrate of Mirzapore,—(No.* 119, *dated* 23*rd July* 1870).

Forwards a report on cattle poisoning by Mr. F. C. Daukes, Assistant Magistrate. Mr. Daukes remarks that between July 1869 and July 1870, 11 cases occurred in which a conviction was procured. The defendants were all Chamars. The poison made use of was universally white arsenic; cases are now on the increase. Mr. Duthoit, an Agent of the Maharajah of Benares, states that such cases are comparatively new on the Maharajah's estate and apparently on the increase.

These 11 cases are tabulated in the following statements:—

Cattle Poisoning in the Mirzapore District between the months of July 1869 *and July* 1870.

Serial Number.	Name of accused.	Caste of accused.	Occupation of accused.	Name of Pergunnah.	Name of convicting Magistrate.	Date of conviction.	Sentence.	REMARKS.
1	Goorhon ...	Chamar...	Kheti ...	Burhur ...	Mr. Hobart, Joint Magistrate.	July 13, 1869	Two years' rigorous imprisonment (under Section 429, I. P. Code).	The accused in this case poisoned a cow belonging to a man named Baboolall. Accused fully admitted his guilt, stating that the means he employed were "goomchee and wool," which, when mixed, he placed under the beast's tongue. He also acknowledged to having killed two beasts in the same way during the same year, and stated that his object in so doing was to get possession of the skins.
2	Panchee ...	Ditto ...	Ditto ...	Bhudohee...	Mr. R. J. Leeds, Joint Magistrate.	Oct. 7, ,,	Six weeks' rigorous imprisonment (under Sections 511 and 426).	In this case the accused was found by prosecutor in the act of administering poisonous pills to one of his bullocks. The pills were forwarded for examination by the Chemical Examiner, North-Western Provinces, and were found to consist chiefly of white arsenic.
3	Shewadharee & Mussamut Munghya.	Ditto ...	Ditto ...	Ditto ...	Ditto ...	,, 20, ,,	Six weeks' rigorous imprisonment (under Sections 511 and 426).	In this case the accused, mother and son, were detected endeavoring to poison some buffaloes by feeding them on pills composed chiefly of white arsenic. The male prisoner was found actually feeding the beasts, the female standing near him.
4	Bachna ...	Ditto ...	Hulwai ...	Ditto ...	Ditto ...	Nov. 5, ,,	Five stripes with rattan (Sections 426 and 511).	In this case the accused, a boy of about 8 or 10 years of age, was found endeavoring to poison a bullock by feeding him with pills found to contain white arsenic.
5	Mussamut Budhni.	Ditto ...	Kheti ...	Ditto ...	Mr. W. Duthoit, Joint Magistrate.	Feb. 3, 1870.	One year's rigorous imprisonment, Rs. 12 fine, or in default 3 months' rigorous imprisonment (Section 428).	In this case the accused was seen putting some thing wrapped in blades of barley into the animal's mouth. The animal died 28 hours afterwards, having previously been in health.

MIRZAPORE.
J. Simson, Esq.

Cattle Poisoning in the Mirzapore District between the months of July 1869 *and July* 1870,—continued.

Serial Number.	Name of accused.	Caste of accused.	Occupation of accused.	Name of Pergunnah.	Name of convicting Magistrate.	Date of conviction.	Sentence.	Remarks.
6	Sheogholam ...	Chamar...	Kheti ...	Bhudohee ...	Mr. W. Duthoit, Joint Magistrate.	Mar. 16, 1870	One year's rigorous imprisonment (Sections 511 & 428).	The accused in this case endeavored to poison some cattle by putting poison in the grass upon which they were feeding. The cattle on smelling the grass refused to eat it.
7	Sheobhajan and Bhawan.	Ditto ...	Chamarni ...	Burhur ...	Mr. E. G. Jenkinson, Officiating Magistrate.	„ 5, „	Six months' rigorous imprisonment and Rs. 6 fine, or in default 1 month's rigorous imprisonment (Sheobhajan). Bhawan, 10 stripes with rattan.	The accused in this case admitted that they poisoned a cow by introducing a "buttee" under its tail.
8	Sohun ... Bondhu ... Churmun ...	Ditto . .	Kheti ...	Bhudohee .	Mr. W. Duthoit, Joint Magistrate.	„ 26, „	One year's rigorous imprisonment and Rs. 5 fine, or in default 3 months' rigorous imprisonment (Section 428).	In this case the accused were detected administering poison wrapped in leaves to a bullock, from the effect of which the beast died. Two of the accused held the cow, while the third administered the poison.
9	Devee Deen ... Bhudhu ...	Ditto ...	Ditto ...	Ditto ...	Ditto ...	April 19, „	Nine months' rigorous imprisonment and Rs. 5 fine, or in default 3 months' rigorous imprisonment (Section 428).	In this case the accused were detected giving leaves to a bullock to eat. Bullock died 2 ghurries afterwards. It does not appear what the nature of the poison administered was.
10	Jhumuk ...	Ditto ...	Mujduri ...	Kuntit ...	Mr. H. P. Mulock, Asst. Magistrate.	May 21, „	Twenty stripes with rattan (Sections 511 and 428).	The accused in this case was detected attempting to administer poison to a bullock. When asked what he was feeding the bullock with, he at once acknowledged that it was poison.
11	Bhagu ... Ramtahul ... Jhumuk ... Sheoummur ...	Ditto ...	Kheti ...	Burhur ...	Ditto ...	June „ „	Bhagu, Jhumuk, Sheoummur to be acquitted, Ramtahul 15 stripes with rattan (Section 428). Names of three acquitted to be entered in Badmash Register with view to further enquiries as to their livelihood.	In this case the accused were charged with poisoning a bullock by inserting some poisonous substance in its tongue. One of the accused, Ramtahul, confessed The Court, considerin that there was not sufficient evidence as against the other three prisoners, acquitted them.

SUMMARY.

MIRZAPORE.

It will be seen from the preceding statement that during the twelve months, from July 1869 to July 1870, eleven cases of cattle poisoning have occurred in the Mirzapore District, in which a conviction has been procured. With reference to the points in the Commissioner's Circular No. 52, dated 9th July 1870, as to the caste and occupation of the convicted, it will be seen that without exception the caste was that of chamar, and that the occupation of the prisoners was almost exclusively that of agriculture, with two exceptions of Chamari and Mujduri. It will be seen that out of the eleven cases, seven occurred in Pergunnah Bhudohee in the Family Domains of the Maharajah of Benares, three in Pergunnah Burhur, and the remaining one in Pergunnah Kuntit. The poison made use of appears to be almost universally white arsenic. Mr. Duthoit, the Deputy Superintendent of the Family Domains of the Maharajah of Benares, states that such cases are comparatively new in his Ilaqua; that two and a half years ago they were almost entirely unknown, but that they are now very much on the increase. There appears to have been no previous correspondence on the subject.

MIRZAPORE;
MAGISTRATE'S OFFICE,
The 23rd July 1870.

F. C. DAUKES,
Assistant Magistrate.

Captain C. A. Dodd, in his "note on cattle poisoning," states that in 1868 and 1869. there were 16 cases instituted and 14 persons convicted in the district of Mirzapore.

Report by P. WIGRAM, Esq., *Officiating Magistrate of Bustee,—(No.* 61, *dated* 14*th July* 1870), BUSTEE. P. Wigram, Esq.

States that no conviction has been obtained for cattle poisoning during the preceding 12 months.

Report by W. YOUNG, Esq., *Officiating Magistrate of Goruckpore,—(No.* 106, *dated* 14*th July* 1870*)*. GORUCKPORE. W. Young, Esq.

States that during the preceding 12 months only one case of cattle poisoning has occurred. One chamar was caught in the act of giving yellow arsenic wrapped up in some castor-oil leaves; another chamar was arrested for abetment, having given poison to the former for the purpose. Both were punished by 1 year's imprisonment each. The crime of cattle poisoning is said to be rare in the district.

W. A. Forbes, Esq., C. B., Commissioner of Benares, in forwarding the two last papers, warns the Commission from accepting them as a true index of the extent of poisoning, remarking that large herds are brought to the jungle tracts in these districts for grazing, and that he has no doubt the system of cattle poisoning flourishes there in all its enormity.

ALLAHABAD. C. J. Robertson, Esq.

MR. C. J. ROBERTSON, *Magistrate of Allahabad, forwards* (*No.* 106, *dated 6th October* 1370) *a statement of convictions for cattle poisoning during the preceding* 12 *months.*

There were 24 cases, all chamars, including two females and one boy; 6 were punished for attempting to poison, 4 for poisoning, 11 for abetting poisoning, 1 for selling poison, and 1 for having poison in his house; 6 were seized in the act of administering poison, and 3 defendants admitted the offence. The poison was arsenic in all cases where its nature is stated, and it is said to have been mixed with grass in 3 cases, with *jowar* leaves in 1 case, and with *musoor* in 1 case. The punishment awarded varied from 20 stripes to 5 years' rigorous imprisonment.

Abstract of 24 *cases of cattle poisoning in the Allahabad District.*

No. of case.	No. of accused.	Caste.	Crime and its circumstances.	Nature of evidence adduced.	Poison found.	Whence obtained.	Decision of Court.
1	1	Chamar	Attempt to poison cattle.	Seized near the cattle with arsenical pills on him.	Arsenic ...	Not stated	2 years' rigorous imprisonment.
2	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	20 stripes (juvenile offender).
3	1	Do.	Ditto ...	Seized on the spot throwing poisoned grass before cattle.	Not stated	Do. ...	1 year's rigorous imprisonment.
4	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	Ditto.
5	1	Do.	Ditto ...	Seized in the act of placing arsenic mixed with *jowar* leaves before cattle.	Arsenic ...	Do. ...	6 months' rigorous imprisonment.
6	1	Do.	Ditto ...	Admitted a similar offence.	Not stated	Another Chamar.	18 months' imprisonment.
7	1	Do.	Selling poison for purpose of poisoning cattle.	Admitted having sold poison to No. 6.	Do. ...	Not stated	15 months' imprisonment and Rs. 15 fine, or 3 months.
8	1	Do.	Poison found in his house.	Admitted having purchased it.	Do. ...	Do. ...	Ditto.
9	1	Do.	Attempt to poison cattle.	Seized feeding cattle with arsenical pills.	Arsenic ...	Do. ...	5 years' rigorous imprisonment.
10	1	Do.	Abetting cattle poisoning.	Ditto ...	Not stated	Do. ...	4 ditto.
11	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
12	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
13	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
14	1	Do.	Poisoning cattle ...	Admitted offence ...	Do. ...	Do. ...	4 ditto.
15	1	Do.	Abetting cattle poisoning.	Ditto ...	Do. ...	Do. ...	4 ditto.
16	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
17	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
18	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
19	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
20	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
21	1	Do.	Ditto ...	Ditto ...	Do. ...	Do. ...	4 ditto.
22	1	Chamarini	Cattle poisoning ...	Admitted having given poisonous pills mixed with grass (*ukra*).	Do. ...	Do. ...	1 year's rigorous imprisonment.
23	1	Do.	Ditto ...	Seized when giving arsenic in *musoor* flour.	Arsenic ...	Do. ...	Ditto.
24	1	Chamar	Ditto ...	Seized when giving arsenic pills in grass.	Do. ...	Do. ...	Ditto.

No. 5.

JOUNPORE. C. Daniell, Esq.

Report by C. DANIELL, Esq., *Magistrate of Jounpore,*—(*No.* 1, *dated 6th January* 1869).

In October 1868 found, while on tour in the district, that mortality among cattle was occurring extensively, and that a general belief prevailed that many cattle were being poisoned for the sake of their hides. Wholesale dealers were suspected of supplying chamars with arsenic and orpiment to be used for poisoning cattle. The mortality among cattle attributed to poisoning was so great that the district was divided into sections, and allotted to 15 officers for the purpose of enquiring into it. Poisoning was found to be rife in all parts of the district except towards the south-west. Enquiries from Magistrates of neighbouring districts showed that with the exception of the district of Mirzapore the supply of arsenic could not be connected with any place in particular. Three agents of Ghazeepore, hide dealers, acknowledged having sent 4,000 hides from Jounpore down the river, and the number has since been ascertained to have been nearly 5,000. The inquiries of the officers specially deputed showed that in 2,025 villages, 6,354 head of cattle had died by disease or been destroyed during the past year, and the greater part of them since last June. One thousand nine hundred and

JOUNPORE.
C. Daniell, Esq.

seventy-five villages remained in which inquiries were not made, and the probable total mortality is calculated at 12,000 head. Inquiries in the city of Jounpore showed that 9 dealers in hides had in the months of August, September, and October received 7,805 hides, of which 6,142 were exported. From this fact considers the estimate of mortality above given not too high. Ascertained that one Jew in Ghazeepore employed 11 agents in Jounpore to collect hides. Besides the agents at the town of Jounpore there were many others throughout the district. Up to November deaths were attributed to disease, but after the inquiry into poisoning was commenced numerous complaints were made and 17 cases were tried, of which 9 were proved. The means resorted to were 1st, mixing arsenic in the *nand* from which the animal fed: 2nd, wrapping a ball of arsenicated flour in sugarcane, or jowar leaves, and stuffing it into the animal's mouth; 3rd; throwing these balls on the grazing ground; 4th, pricking the mouths of cattle with a poisoned pin; and 5th, wrapping a needle in a rag and thrusting it into the animal's bowels; this produces inflammation and mortification of the bowels. All these means came under Mr. Daniell's notice. Could not obtain an analysis of the stomach of cattle. Considers the greater part of the mortality among cattle to have been due to poison. Arsenic was found to be the poison used in every case. One maund 27 seers and 14 chittacks of arsenic were found in the houses of 7 bunniahs in Jounpore; one man had 1 maund and 14 seers. The zemindars have an accurate knowledge of the existence of the crime and its perpetrators. The chief delinquents are chamars, but Dubgurhs and Julahas also practise the crime. The chamars employ their women to hang about and administer the poison in the modes above stated. Both chamars and butchers state that the hide trade is chiefly supplied from cattle which die. The zemindars in many cases compounded with the chamars not to kill their cattle by giving them money. This was collected by subscription among cattle owners for the ostensible purpose of appeasing the "demon" by a religious ceremony. In other cases the chamars obtained a free holding of their lands, provided that no more cattle should die in the village, and if any died the chamars were to give an elephant in its place. The chamars also threatened to withhold the services of their women at the time of confinement if proceeded against. Only knew one case in which the people threatened the chamars. Since this enquiry was set on foot the tables have been turned and the chamars have paid for silence or given the value of poisoned cattle. Complainants are unwilling to prosecute chamars on account of the delay and inconvenience of the legal proceeding, and the personal hardships connected with it. Considers the existing law too cumbrous to deal with an organized crime, of which individual instances are comparatively trivial. Observed the people working in place of cattle; had noticed the same thing in Shahjehanpore in consequence of cattle stealing. Urges the paramount necessity of legislative interference to regulate the sale of poison. Thinks also that Government should interfere effectively between the agricultural classes and their despoilers, the chamars.

R. Wall, Esq.

From R. WALL, Esq., *Magistrate of Jounpore,*—(*No.* 80, *dated* 20*th August* 1870).

Forwards a tabular statement of 41 cases of cattle poisoning.

Remarks by the Cattle Plague Commission.

On the occasion of the Commission's visit to Jounpore, the records of 51 cases (including these 41) were carefully studied, and the following remarks upon these were written at the time. A list of 51 cases was received from the Magistrate of Jounpore on the 4th of June 1870, in accordance with the request of the Commission. The original records (*nuthee*) were also received along with the list and carefully looked over. The Commission find that 33 cases give evidence of poison having been administered or attempted to be administered by the mouth. The poison was generally found to be arsenic, white or yellow, mixed up with *atta* (flour) or oil-seed, and wrapped up in grass or leaves (*bajra*, castor-oil, mango, &c.) In two cases administration of a suppository (*butti*) was either attempted or effected by the anus, and in one by the vagina. In one case the poison used was *madar* introduced into the rectum in a rag, which rag was found in the rectum on *post-mortem* examination. In many cases the poison which was being administered was found by the Chemical Examiner at Allahabad to be either white or yellow arsenic. In two cases the defendants (chamars) state that they received the poison from hide or leather merchants. The defendants were in the great majority of cases chamars of middle age, but in some cases the individual caught in the act of administering the poison was a child to whom the material had been given for administration by a chamar. In one case the poisoner was an old woman. There are two records which show that after several cases of poisoning had occurred in a village, the inhabitants, suspecting that the chamars had poisoned their cattle, held a *punchayut*, and it was resolved that a certain sum should be paid to the chamars by each cattle owner with a view of stopping the disease by poojah or other means. The chamars had alleged that the deaths were owing to small-pox and demons. At one of these *punchayuts* the chamars confessed to poisoning a cow, and offered to pay the sum of Rs. 5 to the owner and Rs. 3 costs, and sign an agreement that prosecutor's cattle should not suffer in future. In both these cases where the chamars had received this black-mail deaths were only put a stop to for 10 or 12 days and then re-appeared. The symptoms of poisoning detailed by witnesses are as follows :—The animals fell ill in about 2 hours after administration of the poison, and died generally in 8 to 12 hours after appearance of symptoms, which are described as frothing

JOUNPORE. R. Wall, Esq.

from the mouth, swelling of stomach, and in some cases purging. In one case a cow was stolen and slaughtered for the sake of its flesh in a period of famine. In no case was the stomach or its contents submitted for chemical examination, and in two or three the ball proved to contain poison was fortunately removed from the mouth of the animal before it had been swallowed.

The Magistrate has noted in several of the decisions that cattle poisoning is a very common crime in the district. In several cases evidence exists on the record that the chamar (poisoner) had the right of removing the hides of dead cattle which had belonged to owners to whom they supplied shoes, *motes* (water buckets), &c.

A careful abstract of the 41 convictions has been prepared in the following table :—

Abstract of 41 *cases of cattle poisoning in the Jounpore District.*

Serial No.	No. of defendants.	Caste.	Crime and its circumstances.	Nature of evidence adduced.	Poison found.	Whence obtained.	Decision.
1	1	Chamar	Attempt to poison a cow by throwing a grass ball containing powdered arsenic before it.	Detected in the act ...	Arsenic ...	...	6 months' rigorous imprisonment.
2	2	Do.	Poisoned a bullock ...	Detected in the act of throwing a grass ball containing poison before a bullock, which died the same day.	Not stated	...	One man got 1 year and the other 10 months' rigorous imprisonment.
3	1	Do.	Attempted to poison a bullock by throwing a ball of corn leaves mixed with powdered arsenic before it.	Detected in the act. The ball was removed and the animal did not die.	Arsenic ...	...	1 year's rigorous imprisonment.
4	1	Do.	Poisoned a bullock ...	Detected in the act of feeding a bullock, which subsequently died.	Not stated	...	2 years' ditto.
5	1	Do.	Attempted to poison a bullock by feeding it with a ball of bajra leaves containing arsenic.	Detected in the act. The ball was removed and the animal did not die.	Arsenic ...	...	1½ years' ditto.
6	1	Do.	Poisoned a cow ...	Detected in the act of administering a ball of grass to a cow, which died in a few hours.	Not stated	...	6 months' ditto.
7	1	Do.	Poisoned a bullock ...	Detected in the act of administering bajra leaves to a bullock, which died the same day.	Ditto ...	...	1 year's ditto.
8	1	Do.	Attempted to poison a cow.	Seized in the act of giving orpiment to a cow in leaves. The substance was removed and the animal did not die.	Orpiment	...	15 months' ditto.
9	1	Chamarini.	Ditto ...	Seized in the act of giving powdered arsenic mixed with leaves to a cow. Substance withdrawn; animal recovered.	Arsenic ...	...	6 months' ditto.
10	2	Chamar	Attempted to poison a bullock.	Same as No. 9 ...	Ditto ...	...	1 year's ditto each.

Abstract of 41 *cases of Cattle Poisoning in the Jounpore District,*—continued.

Serial No.	No. of defendants.	Caste.	Crime and its circumstances.	Nature of evidence adduced.	Poison found.	Whence obtained.	Decision.
11	1	Chamar	Killed a cow by thrusting a piece of poisoned cloth into its bowels.	A cow was found sick opposite defendant's house. It died, and the cloth was found in the bowels. Defendant confessed.	Not stated	...	10 months' rigorous imprisonment.
12	1	Do.	Ditto ...	Ditto ...	Do. ...	...	1 year's ditto.
13	1	Do.	Poisoned a buffalo ...	Seen in the act of giving poison to a buffalo, which died.	Do. ...	...	10 months' ditto.
14	1	Do.	Attempted to poison a buffalo.	Seized in the act of giving *bajra* leaves containing powdered arsenic to a buffalo; poison withdrawn; animal did not die.	Arsenic ...	...	1 year's ditto.
15	1	Do.	Attempted to poison a bullock with powdered arsenic contained in Indian corn leaves.	Similar to No. 14 ...	Do. ...	...	Ditto.
16	1	Do.	Attempted to poison a bullock. The arsenic was mixed with *bajra* leaves.	Ditto ...	Do. ...	...	6 months' ditto.
17	1	Do.	Poisoned a cow with a grass ball.	Seen in the act. Cow died.	Not stated	...	10 stripes.
18	1	Do.	Attempted to poison a bullock.	Same as No. 14 ...	Arsenic ...	...	1 year's rigorous imprisonment.
19	3	Do.	Ditto ...	Similar to No. 14. Poison mixed in grass	Not stated	...	$1\frac{1}{2}$ years' ditto. 15 and 10 stripes.
20	1	Do.	Attempted to poison a buffalo by throwing an arsenic pill before it.	Seized in the act. Pill picked up.	Arsenic ...	...	1 month's rigorous imprisonment.
21	1	Do.	Attempted to poison a bullock.	Same as No. 14 ...	Do. ...	...	6 months' ditto.
22	1	Do.	Poisoned a buffalo with powdered arsenic mixed with *bajra* leaves.	Seized in the act; animal died in a few hours.	Do. ...	...	$1\frac{1}{2}$ years' ditto.
23	2	Do.	Attempted to poison a bullock with *koochla* (nux vomica) mixed with grass and leaves.	Seized in the act; poison withdrawn; animal did not die.	*Koochla*	...	1 year's ditto each.
24	1	Do.	Poisoned a cow with a grass ball.	Seized in the act. Arsenic pills found in his house. Cow died soon after.	Arsenic ...	...	4 months' ditto.
25	1	Do.	Attempted to poison a buffalo with a grass ball containing arsenic.	Seized standing close to the animal with the ball in his possession.	Do. ...	...	3 months' ditto.
26	1	Chamarini.	Attempted to poison a cow with powdered arsenic in pill.	Seized standing close to the cow. Confessed her intention to poison.	Do. ...	...	2 months' ditto.
27	1	Do.	Attempted to poison a cow with arsenic mixed in *bajra* leaves.	Same as No. 14. Confessed.	Do. ...	...	1 month's ditto.

JOUNPORE.
Abstract of cases.

Abstract of 41 *cases of Cattle Poisoning in the Jounpore District,*—concluded.

Serial No.	No. of defendants.	Caste.	Crime and its circumstances.	Nature of evidence adduced.	Poison found.	Whence obtained.	Decision.
28	1	Chamar	Attempted to poison a cow by putting an arsenic pill in the mouth.	Seized in the act. Pill fell out. Cow did not die.	Arsenic ...	...	5 stripes (boy).
29	1	Do.	Poisoned a cow with a ball of *bajra* leaves.	Seized in the act. Cow died the same day.	Not stated	...	1 year's rigorous imprisonment.
30	1	Do.	Poisoned a bullock with a grass ball.	Seized in the act. The bullock died in a few hours.	Do. ...	...	1½ years' ditto.
31	1	Do.	Attempted to poison a bullock.	Seized in the act. The poison was removed before the animal ate it.	Do. ...	...	1 year's ditto.
32	1	Do.	Attempted to poison a bullock with an arsenic pill.	Ditto ...	Arsenic ...	..	2 years' ditto.
33	1	Do.	Poisoned a bullock.	Seized in the act. Bullock died in a few hours.	Not stated	...	1 year's ditto.
34	1	Do.	Attempted to poison a bullock with arsenic mixed in *bajra* leaves.	Same as No. 14 ...	Arsenic ...	...	4 months' ditto.
35	1	Chamarini.	Attempted to poison a cow with an arsenic pill.	Seized in the act. The pill was snatched out of her hand.	Do. ...	...	1 week's simple imprisonment.
36	1	Chamar	Poisoned a cow.	Seized in the act. The cow died soon after.	Not stated	...	1 year's rigorous imprisonment.
37	1	Chamarini.	Attempted to poison a cow.	Same as No. 35 ...	Arsenic ...	...	2 years' ditto.
38	1	Do.	Attempted to poison a buffalo with arsenic pills.	Seized in the act. The pill was picked up and the animal did not die.	Do. ...	...	1 year's ditto.
39	1	Chamar	Attempted to poison a bullock.	Ditto ...	Do. ...	...	8 months' ditto.
40	1	Do.	Poisoned a cow ...	Seized in the act. Cow died same day. Packet of arsenic found on his person.	Do. ...	...	6 months' ditto.
41	1	Do.	Ditto ...	Seen giving something wrapped up in leaves to a cow, which died the same day.	Not stated	...	1 year's ditto.

Captain C. A. Dodd states, in his "note on cattle poisoning," that in the years 1868 and 1869, 67 cases of cattle poisoning were instituted and 54 persons convicted.

ILLUSTRATIVE CASES.

R. J. Crosthwaite, Esq. *Extract from decision of* R. J. CROSTHWAITE, Esq., *Offg. Joint Magistrate, Jounpore,*—(*No.* 556, *dated 2nd September* 1869).

THAKOOR CHAMAR.

A common case.

The prosecutor went out of his house in the morning for a necessary purpose. On his return he found the prisoner giving his bullock something to eat. One other man Nunda, who lives close by, says he saw the prisoner give the bullock some *bajra* leaves, and the other three witnesses saw the prisoner running away from the bullock. It is also proved that the prisoner gets the skins of prosecutor's dead bullocks, and that other parties whose bullocks' hides he gets have also lost cattle. Prosecutor's bullock was taken ill two hours after,

and died that evening. The symptoms are the same as those described by all witnesses in these poisoning cases (symptoms as given by witness Muttalie Sonar). Two hours afterwards the bullock got ill and fell down, foamed from the mouth, had diarrhœa, and died that evening. JOUNPORE. R.J. Crosthwaite, Esq.

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Extract from decision of R. J. CROSTHWAITE, Esq., *Offg. Joint Magistrate, Jounpore,*—(*No.* 621, *dated 3rd October* 1869).

PHAGOONIE CHAMAR.

* * * * * *

The prisoner was seen by a boy who was grazing cattle to offer something in a leaf to a bullock. The bullock was frightened and started back. The boy, Sukh Raj, cried out, and prosecutor, who was close by, ran up and caught the prisoner, and took the leaf and stuff out of his hand.

Extract from report of G. GRANT, Esq., M. B., *Chemical Examiner for the North-Western Provinces,*—(*No.* 218, *dated* 14*th October* 1869). G. Grant, Esq.

The contents of the packet were as follows,—a bundle of *jowar* leaves, in which was a ball apparently composed of a sort of coarse *atta*. Chemical analysis.

The contents were duly examined by me, and the result is as follows,—white arsenic in large quantity was detected in the ball.

Extract from decision of R. J. CROSTHWAITE, Esq., *Offg. Joint Magistrate, Jounpore,* —(*No.* 39, *dated* 11*th December* 1869). R.J.Crosthwaite, Esq.

SOOKHOO CHAMAR.

The accused was seen to throw a ball to a buffalo by one witness, and was seen by others running away with the prosecutor after him. * * *

Extract from report of J. WALKER, Esq., M. D., *Chemical Examiner for the North-Western Provinces, &c.,*—(*No.* 11, *dated* 20*th January* 1870). J. Walker, Esq.

The contents of the packet were as follows,—a ball rolled up in *bajra* leaves, said to have been taken from Sookhoo Chamar. Chemical analysis.

The contents were duly examined by me, and the result was as follows,—on breaking the ball I found in its centre a mass of yellow sulphuret of arsenic, the rest of the ball being made of coarse *atta*.

Decision of R. J. CROSTHWAITE, Esq., *Offg. Joint Magistrate, Jounpore,*—(*No.* 267, *dated* 28*th May* 1869). R.J.Crosthwaite, Esq.

LUBHOO AND HURI CHAMARS.

The prisoners are charged with killing a cow by thrusting a poisoned stick up its fundament. The case is clearly proved against them, and they, each of them, admit that they were present when the cow was being killed, and knew it was being killed; each accusing the other of having killed it. There is no doubt that they are both equally guilty. The crime is one of abominable cruelty and must be punished severely. An unusual case.

Decision of J. H. CARTER, Esq.,—(*No.* 69, *dated* 17*th February* 1869). J. H. Carter, Esq.

DOWTAL CHAMAR.

The witnesses have not appeared, but as defendant pleads guilty, there is sufficient case on which to convict. Defendant admits that he used the cloth on a stick with intent to kill the cow. It is immaterial therefore whether the cloth is saturated with poison or not; the intent was the same. The Court finds that Dowtal Chamar attempted to commit mischief and did an act towards the commission thereof, and direct * * * An unusual case.

Witness Nanoo Aheer Oomree, 45, *Cultivator.*—Ten days ago Khoshal had taken my 8 head of cattle out to graze. He reported to me that defendant had inserted this *butti* into the vagina of a cow. The cow has not died; this other *butti* was found before me in Dowtal's house. Khoshal gave me the *butti* which is tied on the stick.

Dowtal Chamar Oomree, 20.—Pleads guilty; did it to get the skin. This other *butti* was also found in my house. I got it from a bunneah as *jhoontee,* not poison. The cloth is saturated with swallow-wort.

JOUNPORE. Illustrative cases.

Evidence recorded in case of Government versus *Utahil, Jugroop, and Dhurma, No. 93, dated 10th March 1869.*

Ball administered by a boy.

Prosecutor.—Jurbundhun Sahai was bathing at a well on the 18th of February last, when I saw prisoner come up and give my cow a ball; she was tied up at the wall of my door. He was picking up sticks when I saw him first near my door. I said to him, what do you pick up sticks there for? He came back again in a little while and gave the cow a ball. I was a beegah off and ran up. Prisoner ran into a narrow field. I caught him; he began to cry, and then told me that Jugroop and Dhurma had fed him and given him two annas and the ball, and told him to give it to my cow. He held the ball in the palm of his hand under the cow's nose, and she took it. The ball was given about 2 P. M., and she died that night about 12 o'clock. The cow foamed at the mouth, and her belly swelled out. There was a *punchayut* in the village 12 days afterwards, consisting of Doorga Oopadhya, Sumdun Oopadhya, Meda Oopadhya, Oodut Oopadhya, and Soodun Oopadhya. Jugroop and Dhurma asked me to take Rs. 8 and a written agreement that I should suffer no injury to my cattle afterwards. They admitted before the *punchayut* that they had given the ball to the boy to give to the cow. I would not agree to their offer. Jugroop asked to have a *punchayut*. He asked me to forgive him. Both the prisoners confessed before the *punchayut* that they were in fault and asked the *punchayut* to fine them. This the *punchayut* refused. I only lost this cow, but others in the village did die in the same way as this cow of mine; no one threatened me about my cow. I have no enmity with Jugroop. Twice the people of the village gave money to Jugroop, Bhondro, Shunkur, and Dhurma to keep the cows from dying; gave them a rate of an anna per house; the money was given before the whole village. I also paid the money; none died for some days, and then they began to die again. Jugroop then said that they were dying of the cow-pox. They had no eruption, but died like my cow.

Symptoms.

Village *punchayut*.

Chamars bought over.

Examination of Jugroop.—I never asked prosecutor to have a *punchayut*, nor confessed to giving the boy the ball. No man ever gave me any money to keep the cows from dying. Utahil is no relation of mine. Prosecutor has put him up to saying I gave him the ball.

Witness for prosecutor.—Syumber Oopadhya was collecting *sursu* 18 days ago in my garden, when Jurbundhun cried out that a chamar was giving his cow a ball. I saw prisoner Utahil running away. He ran into a narrow field, and Jurbundhun caught him. Jurbundhun then charged Utahil with giving his cow a ball and asked him where he got it; he said from Jugroop and Dhurma. The cow died at midnight. It foamed at the mouth and its belly swelled. After a week a *punchayut* was called consisting of Syumwaz Oopadhya, Sumwowar Oopadhya, Syadeen, Doorga, and Mede and Juggor Oopadhya. I was not at the *punchayut*, but I heard afterwards what happened. I did not see Utahil give the cow a ball. About 40 cattle died in the village before. A collection was made of an anna a house and given to Jugroop and Dhurma to stop the cows dying; the money was given in my presence.

Cow-pox.

Syumber Oopadhya continued.—For 15 days no animal died; then they began to die again. Shumber and the others said that the cattle were dying of cow-pox.

Examination of Dhurma.—I did not receive any money to keep the cattle from dying; there was no *punchayut* held about me.

Why the money was given.

Syumber recalled.—We gave the money to the chamars, not because we knew they were poisoning the cattle, but because we wanted them to do poojah to stop the deaths among the cattle, and the cattle in our village died in one way first as Jurbundhun's did; they foamed at the mouth and their stomachs swelled.

Examination of Utahil.

Question.—Why did prosecutor arrest you?

Answer.—Jugroop and Dhurma gave me a ball to give to Jurbundhun's cow. I gave it to the cow. Did not see ball made. I never gave any cattle balls like that before; no one else was present when they gave me the ball.

Rameshur Oopadhya.—Saw Jurbundhun taking the boy along. I saw the boy Utahil give the cow a ball and run off, and Jurbundhun catch him. I don't know what happened at the *punchayut*. I lost three cows; they foamed at the mouth and their bellies swelled. The chamars said they died of cow-pox; a rate of an anna a house was levied and paid to Jugroop and Dhurma and the other chamars to stop the demon from killing the cows.

Hurbuns Oopadhya.—Was cutting up fodder for my cattle; saw Utahil give a ball to Jurbundhun's cow and run off; Jurbundhun caught him. The cow died at midnight, mouth foamed and stomach swelled; a good many cattle died in the village; all died in the same way. Dhurma and Jugroop and the other chamars said they were killed by a demon. A fee was raised by cess on the villagers and was paid to Dhurma and Jugroop in my presence and to the other chamars to sacrifice a pig and propitiate the demon. The cows died after this, and they said the demon would not mind them.

Cattle continue to die.

JOUNPORE. Illustrative cases. The village *punchayut*.

Doorga Oopadhya.—Was a member of *punchayut* held about poisoning of Jurbundhun's cow. Jugroop said he was in fault and asked us to take Rs. 5 for the cow and Rs. 3 for expenses; we told Jurbundhun that he might take the money or not as he liked; we could not settle that. Jugroop confessed to us that he had given the ball to Utahil to give to Jurbundhun's cow. Dhurma also confessed that he had given the ball to Utahil. A great many cattle died in our village in the same way as Jurbundhun's cow. They lived about 6 hours after being ill; belly swelled, and foamed at the mouth. Four rupees were raised by us to pay the chamars Jugroop and Dhurma, and the other chamars took it to sacrifice a pig and save the cattle. About 15 days after the cattle began to die again.

Syn Breedaz Oopadhya.—Was at a *punchayut* about Jurbundhun's cow. He gave information at Thanna against Jugroop and Dhurma, and they wanted him to recall it. Jugroop and Dhurma said before the *punchayut* that they would pay Rs. 5 for the loss and Rs. 3 for expenses; we told Jurbundhun to go and complain to the Government, we had no power in the matter. Jugroop and Dhurma said they had given the ball to Utahil to kill Jurbundhun's cow. About 40 cattle died; they foamed at the mouth and their bellies swelled. Jurbundhun's cow died in same way; a cess was raised for the chamars to stop the cattle dying,—an anna on every house. We thought the cattle were dying of sickness; the chamars said they died of *dukhina chechuck*.

Mede Oopadhya.—Jugroop and Jurbundhun called me and others to a *punchayut*. Jugroop said he was in fault and wanted us to fix the damages to be paid to Jurbundhun. Offered to pay Rs. 5 for the cow and Rs. 3 costs. Jugroop and Dhurma said the cow had died because they had given Utahil a ball to kill it; they admitted this clearly. Jurbundhun did not take the money. About 40 head of cattle died in my village of poison. They died like Jurbundhun's cow, foamed and their bellies swelled, and they died in about 6 hours; we raised a cess of an anna a house and paid it to the chamars, Jugroop and Dhurma, to stop the sickness; they said the cows had the *dukhina* cow-pox.

Oudit Oopadhya.—Was at a *punchayut* about Jurbundhun's cow which had been poisoned. Jugroop said he was in fault, and he would pay Rs. 5 for the cow and Rs. 3 for costs; we said we had no authority in the matter. Jugroop and Dhurma were both present at the *punchayut*. They both confessed that they had given the ball to Utahil to give the cow, and think that that had killed it. This they confessed plainly before every one.

Sunnooman Oopadhya.—Was at a *punchayut* which was called about Jurbundhun's cow which had been poisoned. Jugroop and Dhurma were both present at the *punchayut*. They both confessed that they gave the ball to Utahil to kill the cow. They offered to pay Rs. 5 for the cow and Rs. 3 for expenses; we did not approve of this. The *lohar* (prosecutor) said he would not take the money.

Jurbundhun Oopadhya.—Was not present at any *punchayut*; I was at my house; don't know anything about the matter.

Defence of 1st, Utahil.—Jurbundhun and all told me to accuse the other prosecutor of giving the ball. I did not give the cow the ball. Jurbundhun told me to say so. I was in a *bagh* (garden), and he caught me and gave me a rupee and told me to say as I did.

2nd, Jugroop.—I did not give the ball to the prisoner. I did not call the *punchayut*, nor say I had given the ball before them, nor say that I was in fault. Prosecutor and witness are at enmity with me, because I made prosecutor a pair of bellows, and when I asked for money he would not pay. I am a chowkeedar, and when a Government officer comes into camp I cut wood and bamboos; hence the witnesses are at enmity with me.

3rd, Dhurma.—I did not give the ball to the prisoner Utahil. I did not confess before the *punchayut*, nor say I was in fault. I made a pair of bellows for Jurbundhun for Rs. 4, and he would not pay; hence he is at enmity with me. My brother is a Government servant and cuts wood and bamboos for officers in camp; hence the witnesses are at enmity with me.

Witnesses for defence.

1. *Rampertab Brahmin.*—I was not at my house. I don't know anything about this case.

2. *Phenhoo Aheer.*—My house is a *koss* off from Bughowra. I know nothing about this case; don't know whether there was a *punchayut*, nor whether prosecutor and his witnesses are at enmity with the prisoner.

3. *Purotee Singh.*—I live a *koss* from Bughowra, and know nothing.

JUDGMENT.

The prisoner Utahil was caught by the prosecutor giving his cow a ball, and confessed there that Jugroop and Dhurma, two chamars, had bribed him to do so. The ball was given about 2 P. M., and the cow died that night about 12 with, I should say, evident symptoms of poison. The prosecutor gave information at the Thanna about 12 days after the cow died. A *punchayut* was held in the village to settle the matter. The prosecutor and 5 witnesses who were all present at the *punchayut*, or members of it, state that Jugroop and Dhurma admitted that they had given the ball to Utahil to give to the prosecutor's

JOUNPORE. Illustrative cases.

cow, and that they offered to pay Rs. 5 for the cow and Rs. 3 for expenses to the prosecutor. This the prosecutor would not accept, nor did the *punchayut* approve it. They were accordingly prosecuted. When first examined the boy Utahil confessed before me that he had given the ball to the cow, but in reply to the charge he contradicts this statement, and says that Jurbundhun put him up to it. The other two prisoners deny the charge, and say that there was no *punchayut* held at all, and that they never confessed. They also state that prosecutor accuses them because he owes them for a pair of bellows, and the witnesses for the prosecutor accuse them because one of them is a chowkeedar, and cuts wood and bamboos when Government officers are out in camp. The offence is clearly proved against Utahil by the evidence of the prosecutor and 3 witnesses and by his own admissions. He is a boy of 12 or 13 years of age, and would not be in the least likely to make up a poison ball and poison the cow of his own accord. It is also proved that the cow was poisoned. With regard to the prisoners Jugroop and Dhurma, the proof of the charge rests on the evidence of their confession made before the *punchayut*, and on the evidence that the cow was actually poisoned. The prisoners can be convicted on evidence of their confession made before the *punchayut* (*vide* Archibald's Practice in Criminal Cases, page 217), and that they actually made this confession I have not the slightest doubt. I consider the evidence with regard to what took place at the *punchayut* most satisfactory. The defence is worthless. No supplies are ever got now through chowkeedars, and even if they had been, it is utterly unlikely that so elaborate a plot would be got up to punish the prisoner for having cut and brought wood to an officer's camp.

The case is, in my opinion, proved, and I sentence the prisoners Jugroop and Dhurma severely, as this crime of cattle poisoning is one of abominable cruelty, and has been caused to an enormous extent in this district, and must be stamped out. The boy Utahil is not too young not to know what he was about, but he is not so culpable as the elder prisoners.

J. W. CROSTHWAITE,

The 20th March 1869. *Offg. Joint Magistrate.*

Government versus *Bishram Chamar*,—*No.* 426, *dated* 18*th August* 1869.

Poisoning by *madar*.

Prosecutor Noshiram.—About 20 days ago, midday, my cow was tied up grazing near my house. A short time after I went to look, and found the cow had broken loose, and went to prosecutor's house in consequence of what Alum Singh told me. Saw then the cow lying on the ground just outside prosecutor's house. I drove the cow a short way, and then she died. I reported at the station. I keep the skins of dead cattle for *motes;* the prisoner gets their flesh. The prosecutor told the Jemadar he wrapped up *madar* juice in a cloth and thrust it up the cow's fundament. The Jemadar then cut the cow open and found the bit of cloth now in Court. I lost a bullock also two months ago; it died in the same way. Its belly swelled, so did this cow's. Eleven cattle have died in my village in the last fifteen days.

Examination of Bishram Chamar.

Question.—Have you any statement to make?

Answer.—Juggoo made up the bit of cloth in Court with *madar* and gave it to me; then Kultoo caught hold of the prosecutor's cow by the horns and I thrust the cloth into the cow's fundament with my hand, and she died. I did it to get the flesh, because I was dying with hunger.

Witnesses for prosecution.—1. *Alum Singh* was coming from Bazaar a month ago about midday, when I saw these chamars, Bishram, Juggoo, and Kultoo, holding the prosecutor's cow in a thicket between prosecutor's and prisoner's house. The cow died that same day, about an hour after I saw it.

2. *Sookloo Chamar* was digging my field about 2 beegahs off from the chamar's house, and saw Kultoo holding the prosecutor's cow, and Juggoo shoved something up its fundament in cloth; that now shown me is the one that was found. The cow died two hours afterwards.

J. W. CROSTHWAITE,

The 18th August 1869. *Offg. Joint Magistrate.*

Defence of Bishram Chamar.

Killing for the flesh.

I killed the cow, as I have said already; I was dying of hunger.

JUDGMENT.

The prisoner confesses that he killed the prosecutor's cow by thrusting a poisoned rag up its fundament. In consequence of his making this statement to the Police they very properly had the cow opened, and found a bit of rag in it. The prisoner states in Court that this is the bit of rag he used. From the evidence for the prosecution I have no doubt that the prisoner's confession is correct, and I therefore convict him. In consequence of prisoner confessing and of the great scarcity at present, I have not punished as severely as I should do under other circumstances. The cow was killed for the flesh, and not for the skin.

J. W. CROSTHWAITE,

The 18th August 1869. *Offg. Joint Magistrate.*

JOUNPORE. Illustrative cases.

Government versus *Jugul Chamar and Parravti Chamar*,—(*No.* 499, *dated* 13*th September* 1869).

Charge.—Mischief by attempting to poison a bullock (as defined in Section 428, Indian Penal Code).

JUDGMENT.

A lot of cattle were grazing in the neighbourhood of the village; the prisoners also brought their goats and got them mixed up with the cattle. Parravti Chamar stood aside, and Jugul gave some castor-oil leaves made into a ball to the bullock of Prosunno; the latter saw it and ran up and pulled it out of the bullock's mouth, and on examining it found white arsenic concealed in the leaves. The stuff has been examined by the Civil Surgeon, and that officer states it is white arsenic.

The prisoner pleads guilty. Parravti states that he got the arsenic from a travelling hide merchant.

FINDING.

The Court finds that Jugul Chamar and Parravti Chamar are guilty of the offence specified in the charge, namely, that they attempted to commit mischief by giving poison to a bullock as defined in Section 428 of the Indian Penal Code, and have thereby committed an offence punishable under Section 511 of the Indian Penal Code, and the Court directs that the said Jugul Chamar and Parravti Chamar be rigorously imprisoned for one year.

JOUNPORE,
The 13*th September* 1869.

J. W. CONCANNON,
Deputy Magistrate.

Information obtained by the Commission at Adumpore village on the 4*th of June* 1870, *at* 6 P. M.

Forty-five head of cattle died in 4 to 15 hours of a disease which raged in this village in 1866. They came from work apparently in health, got ill and died during the night or on the following morning. The symptoms were,—watering from the mouth, hoven, and sometimes purging blood; this continued from the latter end of June to November, one or two dying daily. There were two moochees in the village who owned cattle and tilled land, and it was remarked that they never lost a single head of cattle. At that time the chamars had the right of removing the skins. The villagers were chiefly Mussulmans, and from a long time suspected that their cattle were unfairly dealt with by the chamars. The chamars have the right of claiming all skins of cattle that die in the village; they also eat the flesh, they are also employed as agricultural laborers, taking the cattle out to plough and feeding them on their return home at night. The villagers, believing that their cattle were killed or poisoned by the chamars, asked the zemindar to interfere, and after a general meeting at the zemindar's place he suggested that an agreement in writing should be signed by the chamars, who should promise for a consideration of Rs. 8 that the village cattle should be free from attacks of the disease which had lately been killing them: and that in the event of any villager losing his stock the chamars should pay him the value of the same. In consideration of this, the villagers raised the sum of Rs. 8 and paid it to the chamars, who executed a deed of agreement on stamp paper of 8 annas (this deed was produced, and a copy of it will be found on the next page). It was also ascertained that a like agreement had been executed by the chamars in a village of Luckimpore situated at a short distance from Adumpore. (The Tehsildar was requested to procure a copy of this document). At this time an old man from a neighbouring village joined the party and said that very many cattle of his village had been dying suddenly, and about the same time and in the same way as the people of Adumpore had described. Three chamars of his village were seized by the Police, brought to justice, and imprisoned on a charge of poisoning cattle. Since then there has been no case of cattle poisoning in his village; none of the villagers present know of the disease called *chechuck* or *matah*, but they were aware of *khoorah*. No goats died at the same time that the cattle were dying. About 10 days ago 2 deaths occurred among cattle in this village from similar symptoms. The villagers buried their cattle of their own accord, believing that if the chamars did not benefit by the deaths of their cattle, no deaths would occur. This practice having been generally carried out in the village, the chamars, believing that they had a hereditary right to the hides and flesh of dead cattle, filed a suit in the Moonsiff's Court for the recovery of hides, and obtained a decree in their favor. Nevertheless, the Mahomedan owners of cattle continue to bury animals which die in this village; the villagers believe that their cattle are poisoned with some white powdered substance which they think the chamars procure from native druggists.

Deaths in the village in 1866.

Symptoms of murrain.

The moochees suspected.

Rights of chamars.

Action of the villagers.

A bargain concluded with the chamars.

A document drawn up.

Similar course adopted at Luckimpore.

Deaths among cattle in a neighbouring village.

Chamars seized and imprisoned.

Villagers bury their cattle.

Civil action instituted by chamars, and gained.

JOUNPORE.
Copy of agreement with chamars.

Stamp 8 annas.

مایانیکہ بدل چمار و سدل چمار ولدان منگے چمار سیوکیو چمار ولد میور چمار وبیچو چمار ولد
خوشحال چمار ساکنان موضع ادم پور پرگنہ حویلی ضلع جونپور کہ ہین چون اس سال سے سنہ ۱۲۷۳ فصلي
مین اکثر بیل کاشتکاران موضع آدم پور پرگنہ حویلي جونپور مذکور باعث عدم مدبندی هم مقران
نقصان هوا اور کاشتکاران نہایت تنگ وزبردبار هوکر پاس زمینداران کے اطلاع کیا چنانچہ زمینداران
موضع هم مقران کو طلب کیا وفہمایس کیا کہ اب نقصان هوتے نہ پاوے اور مبلغ ۸ هم کو کاشتکاران
سے دلواے دیا چنانچہ همقران اب اچ کے تاریخ سے اقرار نامہ اسبات کا لکھہ دیتے هین واقرار کرتے هین
کہ اجکے تاریخ سے اگر کسي کاشتکار کا بیل نقصان هو تو اوسکي قیمت همقران حسب شرط اقرار نامہ
کے بمقابلہ زمینداران کے کاشتکاران کو دینگے اسمین کچھہ عذر نکرینگے اسواسطے یہہ چند کلمہ بطریق
اقرارنامہ کے لکھدیا کہ وقت پر کام آوے اور سند رہے فقط المرقوم تاریخ آٹھارھوین ماہ جولائي سنہ ۱۸۶۶ ع
مطابق متي اساڑہ سودي چیتھہ سمبت ۱۹۲۳ سال بقلم امیرحسن ساکن محلہ رسولہ اباد

We, Bedul Chamar and Suddul Chamar, sons of Mungi Chamar, and Sookoo Chamar, son of Mewar Chamar, and Bechoo Chamar, son of Choshal Chamar, residents of Mouzah Adumpore in Pergunnah Haveli, Zillah Jounpore: Whereas, this year, 1273 Fuslee, for want of proper attention on the part of ourselves, the cultivators of Mouzah Adumpore in Pergunnah Haveli, Jounpore, have suffered loss of their cattle to a large extent, and the cultivators, being put to great trouble and distress, reported the matter to the zemindar of the mouzah, who, having sent for us, explained to us that henceforth we must guard against loss, and caused Rs. 8 to be paid to us by the cultivators; accordingly, we, the declarants, do hereby execute this declaration from this date, and engage that should any loss of cattle occur to any cultivators from this day, we shall pay, agreeably to the terms of this declaration, the value of the same in the presence of the zemindars without raising the least objection to it. For this purpose we give these few words in writing in the shape of an *ekrarnama*, which may be of use when occasion requires and serve as a document. Dated the 18th July 1866, corresponding with 6th Assar Suddi, of the Sumbut year 1923.

By the pen of Ameer Hussun, resident of Mohulla Russoolabad.

[Here follow the signatures and names of witnesses.]

The 5th June 1870 *at* 6-30 A. M.

Visit to Shikarpore.
No disease.

Shikarpore was visited by the Commission; no disease was prevailing; a cow which had hoof disease 6 months ago was seen. No cases of poisoning reported to have occurred in this village. Saw an elderly man of Shikarpore, who was for a long time in the Police, who

Disease two years ago.

said that years ago he lost 4 head of cattle (his entire herd); they died in 2 or 3 days, and had hoven and purging watery stools and mucus; off feed, and thirsty; discharge from eyes, nose, and mouth. His cattle were not allowed to graze and were tied up in his house; no one had access to them, and he does not suspect poisoning. At this time cattle were dying in the neighbouring villages, and a few recovered; the informant thinks that his cattle died of disease. The disease spread from one village to another, attacking at first one animal and then several. The disease appeared in February (Falgoon). Other people's cattle had the disease last year in March and April. Had never seen any previous attacks. Another Gossain said that the general belief at the time was that the cattle had been poisoned; 3 years ago sheep purged and died. There are chamars in this village, but they are agriculturists, and they do not carry on a hide trade.

The next village the Commission visited is *Dehearpore*, a chamar village, and examined 2 old chamars, but they seemed to be greatly in fear, and could give no information. They, too, had lost cattle from disease; did not know the name of the distemper, though it was bowel complaint.

5th June 1870. JOUNPORE.

Statement of Messrs. Chabry & Freeman.

Messrs. Chabry and Freeman, Indigo-planters, Babcha Estate, Jounpore District, in conversation with Dr. McLeod on the subject of cattle disease, stated that for the last year and the year before last great mortality had occurred among the cattle belonging to the ryots upon the Babcha Estate; the loss of cattle was so great that the cultivation of indigo was seriously interfered with, ryots who had taken advances from the Manager of the estate declaring that, owing to the death of their cattle, they were unable to make good their engagements. This year there has been no unusual mortality among cattle. Neither Mr. Chabry nor Mr. Freeman saw any of the cattle either ill or dying, but Mr. Fraser, an assistant on the estate, lost two bullocks which had been ill for several days, and presented, Mr. Chabry thought, symptoms rather of disease than poisoning. There was great agitation among the Natives during this time, and many chamars were seized in the act of administering poison to cattle, tried and severely punished. The excessive mortality was very generally ascribed to the bad practices of chamars; but Messrs. Chabry and Freeman believe that the majority of the deaths were owing to murrain, though they have no doubt that much poisoning was perpetrated at the time. A native mohurrir (writer) in the concern states that the disease *matah* was common among cattle in this district. He described the symptoms correctly, and said that it prevailed to a greater or less extent every year. He also gave instances of chamars having been caught in the act of poisoning cattle.

Evidence of villagers of Luckimpore, 6th June 1870. LUCKIMPORE.

Situation, &c., of village.

This village is 2½ miles north-east of Jounpore. It contains 60 houses and some 100 or 125 cattle. The inhabitants are *Kolees* (Hindoo weavers) principally. There are also 8 houses of chamars who are employed in working in leather and cultivation to a small extent; the women acting as midwives.

Contract with chamars at Adumpore.

Attention was directed to this village on account of the Commission having been informed by the villagers of Adumpore that an agreement had been drawn up between the chamars and villagers in which the former had undertaken, for a money consideration, that no more deaths should take place among their cattle. This paper has been lost, having been eaten by mice, and two of the villagers, by name Thakoor and Matadeen, give evidence to the following effect:—

Deaths among cattle in Luckimpore.

Four years ago, in the month of March, the village cattle were dying in great numbers. The total loss of the village in three months was 55 head. After 25 of that number had died the villagers suspected that the chamars of the village were poisoning their cattle for the sake of their hides and flesh.

Action taken by the villagers.

The villagers held a public meeting (*Punchayut*) at which the chamars attended, and it was agreed that a subscription should be raised by the villagers in order that a present should be made to the chamars, who were ready to sign an agreement that, on being paid the sum of Rs. 5, no more cattle should die, and that they should submit to the order of a *Punchayut* in the event of more deaths occurring.

The agreement with the chamars.

The agreement was then and there drawn up on stamped paper and signed by three chamars.

Nature of document.

(This document is the one above alluded to as having been eaten by mice. The purport was similar to that of the document drawn up at Adumpore, which was read to the two witnesses, and of which a copy has been taken by the Commission).

Deaths of cattle continue.

After this cattle continued to die, until at last some of the chamars were caught in the act of administering poison, and after trial were imprisoned.

Chamars seized and imprisoned.

For two years after this event no deaths among cattle occurred.

Deaths cease.

Since then (after the expiry of those two years) cattle died now and then, but we cannot say whether of disease or not.

Symptoms of poisoning.

The symptoms of the cattle which died at first were frothing from the mouth and nostrils, purging dung mixed with blood; indications of great pain, namely, falling down after going a few yards, rolling about, kicking out the legs, getting up again and only going a short distance, when they fell again. Death took place in from 12 to 18 hours.

Difference between poisoning and disease.

The reason that we believe that these deaths were from poisoning, and not from disease, is, that when the chamars were seized and punished no more deaths occurred, and that chamars were caught in the act of poisoning in other villages.

When animals suffer from disease a few recover from medicine and linger on for a month or more. No cattle recovered during the years we have spoken of.

When cattle have got ill from disease one or more recover out of five, sometimes two or three. Purging occurs in no other disease except in that which we suspect is caused by the chamars. There are other diseases of cattle, *khanga*, *bellai*, *bhagi*, and *mutteari*.

Varieties of cattle diseases.

In *bhagi*, if cattle are not properly treated, they die.

We only give purgatives in cases of hoven (*baobund*, or wind bound), and then we give ghee. We never heard of cattle being poisoned before four years ago.

Before this cattle only died of old age. At the time that the chamars were imprisoned, the others fled and left their families behind.

Matah or *debee*.

We know of the disease called *matah* or *debee* among cattle. It prevailed in our village 25 years ago. As many of the affected die as recover. There is no purging. When the disease appears we subscribe a few pice for a *poojah*, and it goes away in a day and a half, or so.

N. W. Provinces. W. Walker, Esq., M.D.

Extract from the report of W. Walker, Esq., M. D., *Chemical Examiner to Government, North-Western Provinces, for* 1869.

* * * * * *

Para. 2. There has been a consi lerable increase in the number of references, caused entirely by an unprecedented number of cases connected with cattle poisoning: of these I shall have to speak more in detail, and I refer to them in the meantime merely to indicate the source from whence the large increase of cases was derived. There were in all 277 cases sent up, being 118 in excess of the number received in 1868; and of the excess 117 were cases reported to be connected with cattle poisoning.

* * * * * *

12. I have a few remarks to offer on the large increase in the references made to me bearing on cattle poisoning. During 1867 only one such case was sent up, and during 1868 only five cases, while during the past year the number ran up to 117, or 42·2 per cent. of the whole number of cases referred. As the subject is of some consequence, I shall be excused if I enter somewhat into detail regarding the localities from whence I have received the cases, and the features of the cases themselves.

13. The whole of the cases have been contributed by eight districts,—seven in the North-Western Provinces and one in Oudh. By far the largest numbers were received from Ghazeepore, Azimgurh, Allahabad, and Jounpore. The exact figures are as follow:—

Ghazeepore	43	Mirzapore	5
Azimgurh	26	Benares	3
Allahabad	19	Fyzabad	2
Jounpore	18	Meerut	1
		Total ..	117

14. The circumstances of the cases were almost invariably the same. A chamar is charged with having placed some stuff before a bullock or cow in a surreptitious manner, and the stuff is sent to me for analysis; or a chamar is suspected of being concerned in cattle poisoning; his person and his house are searched, and certain suspicious substances said to have been found are sent for examination. In only two cases I had information that the death of any animal had resulted from poisoning, and in only one of these two (a case in the Cantonment Magistrate's Court at Meerut) was a portion of the viscera of the poisoned animal sent to me for examination.

15. In 28 of the 117 cases there was no evidence of any poison being present; indeed many of the cases seemed to have been very clumsily trumped up. For instance, in case No. 49 from Allahabad, a bunch of castor-oil leaves had been rolled up; in case No. 89 from Azimgurh, a piece of arsenic as big as a walnut was enclosed in some leaves, it being almost as probable that a bullock would chew it as that he would chew a piece of quartz of the same size; in case No. 154 from Ghazeepore, some pounded glass was submitted as the poisoning agent; in case No. 159 from Jounpore, some alum; in case No. 165 from Azimgurh, some common salt, and so on. Even in those cases where I detected arsenic, I frequently found it in so small a quantity that it could not possibly have been given by an expert with the intention of causing the death of a bullock or cow.

16. In a majority of the cases, however, arsenic was found made up in such a quantity and in such a form as would cause the death of, and be readily eaten by, a bullock or cow. The poison was usually made into a fine powder and kneaded up into a ball with some coarse atta; this ball was then rolled up in some grass or leaves of bajra, or mowha, or castor-oil. As I have already said, only two cases were reported in which the death of any animal resulted from eating portion of a poisoned ball; and although I am far from asserting that isolated cases of cattle poisoning do not occur, yet several collateral circumstances make me inclined to doubt that the large number of cases referred to me this year is to be regarded as evidence of systematic poisoning.

17. In the first place, I think it strange that so large an influx of cases should have occurred immediately on the issue of a circular on the subject by the Inspector General of Police (No. 3, dated 4th March 1869).* From 1st January to the 1st April I received only 8 cases, and they formed 13 per cent. of all the cases I received during the first quarter of the year; while, on the other hand, from the 1st April to the 31st December, no fewer than 109 cases were submitted, and they formed more than 50 per cent. of all the cases sent in from the whole of the North-Western Provinces, Oudh, and the Central Provinces. No doubt this great increase may be explained by extra zeal and vigilance on the part of the Police of those districts which are supposed to be peculiarly infested by cattle poisoners, but it is also just as possible, especially in a year of agricultural distress and increased mortality amongst the cattle of the province generally, that this is not the case. Certainly, unexceptionable statements of mortality amongst the cattle are required to confirm the impression to which the records of

* Calling upon District Superintendents to make close enquiries into the subject of cattle poisoning.

N. W. PROVINCES.
W. Walker, Esq., M.D.

my past years' work might at first sight give rise; and besides this, it is, I think, absolutely necessary to make sure that any undoubted increase of mortality amongst the cattle of a district was not caused by one of those mysterious epidemics that attack domestic animals, as if in mockery of the protection afforded them by their masters. It is not to be expected that ignorant peasantry can discriminate between natural disease and the effects of poison; and it only requires a suggestion to make them take up the idea that their cattle are being poisoned, or done to death by witchcraft or any other means than the hand of Providence.

18. Indeed, amongst the cases sent to me during the past year, there were several which show plainly to what extent the ignorant suspicions of the peasantry will exaggerate this matter. In three of them a simple piece of cloth was asserted to have been used by chamars to cause the death of cattle; and in a fourth, a piece of split bamboo, eighteen inches long, was declared to have been given to a bullock, to have caused purging, and been finally passed through the intestines of the animal, no doubt much to its relief and to the confusion of the "poisoner." The stick was sent to me to report what poison could be on it.

19. If I may be permitted, I would suggest the following procedure as a crucial experiment to determine the existence of this presumed cattle poisoning. With very few exceptions the poison used, or said to be used, is arsenic. Now, it is no difficult matter to ascertain whether an animal has died from the effects of arsenic or not; I would therefore suggest that when the civil authorities of a district are apprised of a sudden increase in the mortality of the cattle of a particular locality, an intelligent native doctor should be sent from the nearest station to make a *post-mortem* examination of a few of the dead animals, and that he be instructed to secure in a bottle a piece of the third stomach, of the liver, and of one kidney, of two or three of the animals he examines, making the bottles over to the Magistrate for despatch to me. Large pieces are not required to determine the point. The piece taken from each animal may be accommodated in a clean pickle or tart-fruit bottle, and a little strong country spirit poured over them to prevent decomposition. Until this is done it will always be open to doubt whether increased mortality arises from disease or from poisoning, as it is always open to designing men or ignorant sufferers, from a prevalent epidemic, to accuse some social pariah of the crime of poisoning the village cattle. This, at least, is just as likely to result in the India of to-day as the burning of decrepit old women under similar circumstances in our own country two hundred years ago.

From C. A. ELLIOTT, Esq., C. B., *Officiating Secretary to the Government of the North-Western Provinces, to the President, Cattle Plague Commission,—(No. 742A, dated 27th June* 1870).

C. A. Elliott, Esq.

With reference to your letter No. 357, dated 10th June, I am directed to forward copy of a note drawn up by Captain C. A. Dodd, late Personal Assistant to the Inspector General of Police, on the subject of cattle poisoning, together with copy of a memorandum recorded thereon by Mr. F. O. Mayne, Commissioner of Allahabad, and to request that the Commission will favor Government with their views on the subject in the light of their recent enquiries at Jounpore.

Memorandum on CAPTAIN DODD'S *notes on Cattle Poisoning, by* F. O. MAYNE, Esq., C. B., *Commissioner of Allahabad Division.*

F. O. Mayne, Esq., C.B.

Starvation and poisoning both probable causes of mortality among cattle in 1868.

Captain Dodd has kindly allowed me to peruse this most interesting and excellent report, but I do not agree with him altogether in his deductions. That starvation and hard times may have been partially the cause of greater mortality among cattle last year than usual is not only possible but probable, but that cattle poisoning is professionally carried on by chamars for the sake of the hides in certain districts of the North-Western Provinces is, I think, clearly established. For what other purpose would chamars supply themselves with such large quantities of white arsenic?

Convictions for cattle poisoning.
Importation of arsenic.
Area of cattle poisoning.

Moreover, no less than 296 persons were convicted of cattle poisoning in 1868-69 in six districts only, and 133 of these were in Ghazeepore only. I think more detailed local enquiry into the large importations of white arsenic (*sunkhya*), and where it goes to, would throw light on the subject of cattle poisoning. I do not think we have yet got to the bottom of it. It is, however, also, I think, satisfactorily established that professional cattle poisoning for the sake of hides is confined to certain districts east of Allahabad. That it is not so extensively carried on even there, as was supposed by Mr. Clarmont Daniell, and that in other parts of the province the crime, as a special offence, does not prevail to any important extent.

N. W. Provinces. F.O. Mayne, Esq., C.B.

The attention of the Superintendents of Police in Jounpore, Azimgurh, Ghazeepore, and Benares ought to be specially directed to this crime, and care be taken that the subject does not drift into oblivion.

Special measures required.

I think that special measures may also with benefit be adopted in order to facilitate enquiry and to prevent the commission of the crime.

Render crime cognizable by Police.

The suggestion of Captain Dodd to make cattle poisoning an offence cognizable by the Police is an excellent one, but I do not know how we are to enforce destruction of skins of animals regarding which suspicions of foul play exist. If the zemindars in their own interests will not adopt this simple expedient, I do not see what we can do.

Destruction of skins.

In the districts above mentioned Dr. Walker's suggestion might perhaps be carried out with benefit, but I would not make the rule general. I would try it experimentally in these districts only at first, *viz.*, Benares, Ghazeepore, Jounpore, and Azimgurh. I have always advocated a law for the restriction of sale of poisons, and I believe a draft Act has already been submitted to the Legislature by this Government.

Chemical analysis.

Law restricting sale of poison.

The proposition to compel dealers in hides to register sales is, I fear, hardly practicable. We should want a special law, and the rule might possibly act injuriously on trade; anyhow, until by further enquiry we prove the crime to be more prevalent as a professional crime, we have not sufficient grounds on which to go up to the Legislature to grant a special enactment for this purpose. I would suggest that Captain Dodd's information on the several methods of poisoning cattle and the numerous causes of mortality of cattle be referred to the Cattle Commission now sitting.

Registering sale of hides.

In fact, the whole report may with advantage be sent to them for information, with reference to the enquiries now going on.

Captain C. A. Dodd. *Note on Cattle Poisoning by* Captain C. A. Dodd, *late Personal Assistant to the Inspector General of Police, North-Western Provinces.*

On receipt of Government letter No. 681, dated 22nd February 1869, Mr. Mayne asked me to collect the necessary materials and to draw up a note on the subject of cattle poisoning.

2. I have purposely allowed a delay of some months to occur before completing the task assigned to me by Mr. Mayne, so that I might enquire personally into the matter during my cold weather tour; that I might discover exactly what grounds existed for the popular belief in the prevalence of the crime; and that I might ascertain, if the crime did not prevail, what causes could be fairly adduced to account for the unusual mortality among cattle which undoubtedly occurred during the past years of 1868 and 1869.

Unusual mortality among cattle in 1868 and 1869.

3. The results of the minute investigations made by District Superintendents and of the personal enquiries instituted by myself having now been collected, I beg to report as follows on the subject for the information of the Inspector General of Police.

4. From the reports which have been received it is clear that cattle poisoning is of rare occurrence in districts above Allahabad, and that none of the occasional cases which have been brought to light in those districts bear any professional features or show any trace of the existence of an organised system of crime. The Superintendents of Boolundshuhur, Seharunpore, Moozuffurnuggur, Dehra Doon, Meerut, Bareilly, Shahjehanpore, Moradabad, Budaon, Bijnore, Agra, Furruckabad, Mynpoory, Etah, Cawnpore, Banda, and Futtehpore all record the entire absence of the crime from their districts, while the Superintendents of Allygurh, Etawah, and Muttra report that the offence but very seldom occurs. I myself enquired into the matter in all the districts through which His Honor's camp passed this year, and I found district officers and cattle owners unanimous in discrediting the existence of poisoning to an extent at all calculated to cause uneasiness.

Area of cattle poisoning as an organized crime.

Districts where crime is rare or unknown.

5. That there has been unusual mortality among cattle in most of the districts named is everywhere acknowledged, but it has been fairly attributed to starvation and disease consequent on famine, and to animals over-feeding on fresh grass after months of ill condition. I may add that in these districts, as in other parts of the North-West, cattle die in great numbers from a variety of diseases and from eating certain grasses, herbs, berries, &c., in which the symptoms are frequently similar to those which appear when death is caused by poisoning. This matter, however, will be noticed in greater detail at a later period of this report.

Mortality. Causes.

6. The enquiries which I have instituted, however, lead to the conclusion that while cattle poisoning is a crime of very occasional occurrence in districts above Allahabad, it is far from infrequent in districts below that station, and may comparatively be said to prevail in Jounpore, Ghazeepore, Benares, and Azimgurh. I may, however, say at once that even in those four districts I do not believe that an organized system of cattle poisoning exists, or that the offence is so prevalent as to justify resort either to a special agency or to legislative enactment for its suppression. There is no doubt that a few merchants, but more especially traders at Dinapore, Patna, and Calcutta, received a large supply of skins from these four districts during 1868 and 1869, and that careful scrutiny is required to prevent the increase of what is at present a small nefarious traffic, but at the same time I believe that the unusually large exportation from these districts during those years was chiefly due to the extraordinary weather and its consequent sickness, which told considerably on the very weak, short-lived, ill-conditioned animals which are used in that portion of the North-West, and that so large a supply was thus rendered available by natural causes as to render resort to foul play, as a rule, not only unnecessary, but wholly incommensurate with the risk of detection and punishment.

Districts in which crime is rife.

Not an organized crime.

Large export of hides.

Due to unusual weather and starvation.

7. I have many reasons for arriving at this conclusion, but chiefly the following:—

Cases of cattle poisoning comparatively few.

I.—The following table of cases of cattle poisoning have been received from the under-mentioned districts for the years 1868 and 1869:—

	Cases.	*Persons convicted.*
Jounpore	67	54
Ghazeepore	86	133
Mirzapore	16	14
Azimgurh	69	31
Allahabad	13	27
Benares	18	37
TOTAL ...	269	296

These figures in themselves do not exhibit a state of crime calling for any uneasiness on the part either of Government or the owners of cattle.

II.—It is strange to notice how cases increased with the issue of the Inspector General's circular on the subject. In the Jounpore District perhaps this increase is not so apparent, but even there the prevalence of the crime does not appear to have been appreciated till the district authorities took the matter seriously in hand. I have had several opportunities during the past cold weather of seeing the wonderful effect of the Police Circular, but more especially so in my consultations with Dr. Walker.

Effect of Inspector General's Circular.

In December I first spoke to him on the subject, and he told me that since the commencement of 1869 (or I might almost say for the year 1869), 97 cattle cases had been referred to him—

References to Chemical Examiner.

Ghazeepore	37
Azimgurh	20
Allahabad	19
Jounpore	13
Mirzapore	4
Benares	2
Fyzabad	2
TOTAL ...	97

The story in all these cases is much the same,—a chamar being charged with having been seen giving to a bullock, or having in his possession, a certain suspicious substance. This substance was generally arsenic rolled up in some leaves or in a ball of atta, but in the minority of cases only was it found actually before the bullock as food, and in no cases was the death of an animal reported as having been caused by eating it.

Kind of cases referred.

Thus, in the Allahabad District, out of 19 cases in which chemical examination was solicited, 7 contained no poison, 5 contained arsenic found in the houses searched for suspicious articles, and in 7 only was poison found *merely prepared* in a ball for implied administration to cattle.

The fact of so many cases appearing in the Chemical Examiner's registers immediately after the issue of the Inspector General's Circular in February 1869 demonstrates the effect which the circular in question had of calling forth the energies of the Police in the detection and prosecution of the crime, and the

Effect of the circular.

N. W. Provinces. Captain C. A. Dodd.

fact of many suspicious cases and no instance of actual death by poisoning having been forwarded for chemical report represents to my mind how an order for enquiry into the existence of a particular crime is apt to be regarded by native subordinates as an order to substantiate its prevalence. In support of these remarks I would note that many of the cases sent for chemical examination were manifestly made up; that in some the amount of arsenic said to have been placed before a bullock with intent to kill was not sufficient to poison a mouse, that in others chalk or marble or articles of similar appearance were substituted, and that in frequent instances not only no arsenic and no deleterious drugs, but positively nothing at all was found mixed with the animal's food. I need scarcely add that such like omissions or errors in the administration of poison are not likely to be committed by men who regard cattle poisoning as their profession, and upon whose experience and cunning in such matters, the chief markets of Bengal are said to be in a measure dependent for their trade in hides.

False cases.

III. In bringing forward my reasons for considering that cattle poisoning does not exist to any alarming extent, it is necessary that I should deal with those advanced by Mr. Daniell to support his belief to the contrary. These are contained in the exhaustive report which formed an enclosure to the Government letter now under reply.

Mr. Daniell's report criticised.

The first argument on which Mr. Daniell bases his belief in the prevalence of cattle poisoning is the somewhat large number, *viz.*, 6,354 head of cattle, that died during 1868 in 2,025 villages in the district of Jounpore. I consider that Mr. Court has fairly accounted for this mortality in his letter No. 1A, dated 16th January 1869, to the address of the Secretary to Government, North-Western Provinces; in fact, that he has somewhat understated the case by omitting to notice the unusual mortality of the past two years consequent on famine and sickness, and by calculating the full natural age of a cow or buffalo at 14 or 15 years, whereas from enquiries which I have instituted it appears that they rarely live beyond the age of 12 in the Jounpore and other districts down country.

Mortality from famine.

IV. Again, Mr. Daniell's personal investigations have led him to the conclusion, not only that cattle are poisoned in great numbers in the district of Jounpore, but that zemindars are fully aware of the existence of the crime, and not only know who the offenders are, but actually compound with them not to destroy their cattle. Natives, up-country, with whom I conversed during the past cold weather scarcely credited that zemindars could place themselves so at the mercy of a despised class of men like chamars. One would naturally think that the most powerful party would prevail, and that wealthy landholders and owners of cattle would prevent such a wholesale loss of property, if not by their influence, at any rate by resort to legal measures. Again, the means of coercion noted in the 18th paragraph of Mr. Daniell's report seem to me easy of avoidance. Chamars are surely unable to silence the threats of injured landholders by refusing to allow the attendance of their wives at times of childbirth. I have reason to believe that chamars are very common and very poor, and that under circumstances when one declines service, it is not difficult to procure the attendance of a hundred others within a few miles of any village in the country. With them the love of money soon gains the ascendancy over feelings of brotherhood, and prevents their uniting as a body to maintain the bad cause of a few at the expense of their own pockets.

Influence of chamars over zemindars doubted.

V. There is another point which requires notice, and which at first sight seems to favor Mr. Daniell's belief in the great prevalence of the crime of cattle poisoning, and that is, that during the past years of 1868 and 1869 there has been a large increase in the importation of arsenic as well as exportation of hides. Mr. Daniell alludes to this point in paragraph 15 of his report. I, however, wish to go into greater detail, and have therefore procured my statistics direct from the Collector of Customs in Calcutta. The result of my enquiries is reported in the accompanying table:—

Importation of arsenic and exportation of hides.

Years.	Arsenic imported.		Hides exported.	
	Quantity.	Value.	Quantity.	Value.
	Cwt.	Rs.	Pieces.	Rs.
1865-66	757	18,929	47,10,882	40,61,056
1866-67	2,245	59,985	52,27,029	49,56,153
1867-68	516	10,287	48,08,786	71,12,006
1868-69	2,035	49,599	60,54,601	95,90,804

These statistics, however, are valueless towards a correct estimation of the prevalence of cattle poisoning. In the first place, as far as the importation of arsenic is concerned, the excess in 1868-69 is no proof whatever that the demands of cattle poisoners were greater that year than any other. I think I am correct in stating that 10 grains of arsenic will poison a bullock. There are 60 grains in a drachm; one drachm is sufficient to kill 6 animals. Continuing this calculation, 15 drachms equal one chittak, and one chittak therefore is sufficient to poison 90 head of cattle. Sixteen chittaks equal one seer, and 56 seers equal one hundredweight; therefore one hundredweight alone is sufficient to account for the death of 80,640 bullocks and cows.

Quantity of arsenic required to poison.

I will even allow that poisoners in their ignorance, or with a view to make sure of their victim, administer, say, ten times as much arsenic as is necessary to cause death. This reduces the number of deaths to 8,000, a higher number than that estimated for the Jounpore District for the whole year, and yet accounting for only one out of the 2,035 hundredweights of arsenic imported during 1868-69.

Again, the increase in the importation of arsenic does not at all correspond with the number of hides exported from the country, which it would do were arsenic held to be only used for poisoning purposes. It will be seen from the foregoing statement that there was a larger quantity of arsenic imported during 1866-67 than during 1868-69, whereas not half the number of hides were exported during the former, compared with the exportation of the latter year.

No relation between importation of arsenic and exportation of hides.

With reference to the great increase in the number of hides exported during 1868-69, I need only say that, to my mind, it is fairly attributable to the unusual mortality among cattle during that year consequent on famine and sickness. I ascertained during my visit to Cawnpore that the merchants of that station receive their supplies of skins from districts up-country, and that hides rejected by them are usually sent down to Patna, Dinapore, and Calcutta marts, where indifferent and inferior articles find a readier sale. It is not unfair, therefore, to conclude that during the past year not only did these markets receive unusually large supplies for exportation, but that the Cawnpore market also, overstocked from a similar cause, was able to forward to down-country marts very large consignments of second rate hides, such as on ordinary occasions it might have utilized itself.

Cause of increase of exportation of hides.

VI. I have but one more reason to urge for my disbelief in any organized system of cattle poisoning in the Jounpore and surrounding districts. It is that which has already been advanced by Mr. Court in his letter No. 1A, dated 16th of January 1869. It is indeed difficult to believe that fully populated and fully cultivated villages of the Jounpore District and the centre of a notoriously sickly and ill-conditioned class of animals should have been selected by the professional poisoners as the scene of a profitable trade in preference to the jungle tracts and rich pasturage of Goruckpore, where the cattle are more numerous and valuable, and where the chances of detection and punishment are far less.

Why should Jounpore have been selected by poisoners.

8. Now that I have stated my chief reasons for disbelieving the existence of any extensive system of cattle poisoning, I beg that I may not be considered to have written in any disparagement of Mr. Daniell's able review of this subject, and of his valuable services in the elucidation and suppression of this crime. That there has been great mortality among cattle in the Jounpore District, that many instances are undoubtedly due to foul play on the part of chamars in the employ of butchers and traders in hides, and, moreover, that an effective check has been given to the extension of a ramified system of poisoning, which at one time threatened to raise the fears of the agricultural population, all these points are undeniable, but at the same time I do not consider that the facts elicited by my own enquiries and by the investigations kindly instituted by Superintendents of Police at my request justify the popular belief shared in by Mr. Daniell and his subordinates, that a wholesale organised system of cattle poisoning has existed for some time in the Jounpore and surrounding districts, and has of late been rapidly gaining ground and causing much alarm and dissatisfaction throughout the length and breadth of the country.

Cases of poisoning have undoubtedly occurred.

PART II.

9. While, however, I do not believe that the crime of cattle poisoning exists to an extent calculated to cause uneasiness either to Government or the agricultural population, yet I own that the offence is one which might spread with great rapidity were district officers and the Police to relax in their endeavours to keep it in check. For this reason I have deemed it advisable in the second part of this note to place on record the various schemes resorted to by poisoners to effect their object, and also to note a few of the numerous other causes which exist to account for mortality among cattle, and which, owing to a similarity in their symptoms and results, are not infrequently assigned by mistake to poisoning.

Precaution necessary to prevent the crime spreading.

N. W. Provinces. Captain C. A. Dodd.

Means employed.

The means resorted to by poisoners are carefully detailed by Mr. Daniell in paragraph 11 of his report. I beg to recapitulate them here :—

I. To mix arsenic in the *nand* where the animal eats its bhoosah.

II. To wrap a ball of arsenicated flour in sugarcane or jowar leaves and to stuff it into the animal's mouth.

III. To throw balls of the same composition on the ground where the animal is grazing.

IV. To prick cattle in the mouth with a poisoned pin.

V. To wrap a needle in a piece of cloth and thrust it into the animal's bowels, which produces an internal wound and subsequent mortification.

Causes of mortality.

10. Among the numerous causes of mortality, I would enumerate the following which have been brought to my notice :—

Starvation.

I. First and foremost I would note starvation and exposure during the past years of 1868-69; the loss of cattle simply from these causes has been incalculable. In many of the districts of these provinces there has been no available *fodder whatever*, and large numbers of the agricultural population have been known to start from their homes in search of work and food, leaving their bullocks behind them to starve and die. The same melancholy state of affairs of course exists with reference to shelter, for exposure to the inclemency of the weather is naturally to be expected from the inability of cattle owners to provide even sufficient food for their animals. A man who has not the pecuniary means at his disposal to secure his beast from hunger and starvation is of course not in a position either to erect or to repair sheds for its protection against the severity of the weather. To this two-fold cause, therefore, is to be mainly attributed the unusual mortality among cattle during 1868-69.

Leeches.

II. Among secondary causes I may mention leeches, which, I learn, are frequently fatal to cattle when swallowed by them while drinking water from canals or elsewhere, chiefly from the former, inasmuch as leeches infest canals in great quantities. The unfortunate animal loses all its appetite, becomes perfectly torpid, and ultimately dies a skeleton within a fortnight.

Unwholesome corn.

III. In the year 1868, owing to the irregularity of the rains, the Indian corn was rendered unwholesome in many parts of the country, where it grew only to a certain height and then withered. Cattle partaking of this died in great numbers.

Ghoma.

IV. There is a kind of grass called ghoma which blossoms in the rains, and from eating which cattle become insensible and die soon. The Superintendent of Azimgurh at first brought this to my notice, but I fancy it the same grass which has been described to me in greater detail by Mr. Foster, at the time Officiating District Superintendent of Dehra. In appears to grow to a height of some 4 or 5 feet, and in the grass twig there is a round berry; this eventually forms into a flower; the flower in time becomes seed, and the seed if saturated in water shows a frothy substance like soap. It is said that if cattle eat this grass their stomachs swell, and the result is suffocation and death in a very short time.

Jowar leaves.

Geenja.

V. The cattle are frequently poisoned from browsing eagerly; for instance, if they eat the jowar plant when it has not rained for any length of time, it kills them almost at once, as it checks digestion, they stop chewing their cuds, swell and die in about twelve hours. An insect called "geenja," very much like the centipede, but with thicker scales, and without a sting and perfectly harmless, about an inch and a half in length, which springs up in the rains, if eaten by cattle only, proves fatal.

Poisonous herbs.

VI. Many herbs are also said to be fatal to cattle, such as punkhar-ryan, resembling the babool, pauphoora, relsee, leaves of jowar plant if eaten in the dry season, and many others almost too numerous to mention.

Small-pox, &c.

VII. Species of small-pox, diarrhœa, dysentery, cholera, &c., have proved fatal to a larger extent this year than usual, owing to the ill-condition of the animals, and their proneness to take and to succumb easily to disease. A malignant fever also prevails a great deal among cattle. It is of a typhoid nature and is infectious. It is attributed to ill-ventilated accommodation, want of cleanliness, and insufficient nourishment.

Other diseases.

VIII. From the District Superintendent of Etawah, who has given the subject of cattle poisoning much attention, and from whom I have been able to obtain much valuable information on the subject, I have obtained the following list of diseases among cattle, which prevail in many parts of these provinces :—

I. *Bisee.*—Symptoms, watery eyes, body hot, difficulty in breathing, evacuations thin; goats are very subject to this disease, and the animal attacked rarely survives six or seven days.

Bisee.

II. *Khurputra*, a disease in the feet (rot). Cattle suffer chiefly from this in the rains. They become helpless, the tongue blisters, digestion is checked, inflammation prevents mastication, death follows in 12 or 15 days. Natives in these instances poultice the feet with the mahowa berry after it has passed through one distilling. When maggots get to the feet, tobacco and quicklime are used.

Khurputra.

III. *Daharoora.*—The body becomes overheated, the eyes inflamed, evacuations thin with blood, giddiness and extensive debility follow, and the animal dies in three or four days. This disease is said to be of an epizootic type and to sweep villages of their cattle.

Daharoora.

Mahwaish. IV. *Mahwaish* (Glanders).—Animals die quickly in the absence of treatment.

Ghoorka. V. *Ghoorka.*—Symptoms, inflammation of the throat, froth from the mouth, stomach swells, animal dies in three or four days.

All these diseases and many others are frequent among cattle in this country. In the absence of any knowledge regarding the proper remedial measures, or even of the nature of the complaint from which these animals suffer, a native naturally concludes when unusual sickness and mortality prevail among his herds, that there is some foul work at play, that he is the victim of poisoners, and that it is worse than useless attempting to prevent his misfortunes.

PART III.

I venture in Part III of this note to record my opinion as to the *measures which should be adopted to prevent the spread of cattle poisoning.*

Measures recommended.

These are many. I will therefore merely confine myself to the discussion of the four most important and effective ones.

I. I would in the first place make the crime cognizable by the Police without warrant. At present the offence is not so under Sections 428 and 429 of the Penal Code. It is difficult at any time to suppress what may gradually become an extensive organised system of crime if in each case the Police have to await the order of the Magistracy before taking action and effecting arrest. In the case of cattle poisoning immediate action is particularly requisite, both to secure the conviction of the offenders, and also to act as a deterrent and to prevent the spread of the offence. In the Jounpore District this absence of Police powers to arrest without warrant was very much felt. There was a tardiness in the administration of justice which tended to throw cold water on the co-operation of the public, which under other circumstances would have been rendered with advantage, and it was felt that immediate report in half a dozen cases, followed by arrest, conviction, and severe sentences, would have done more to prevent the continuance of the crime than all the careful investigations and complete reports of native subordinates. I do not know of any particular argument which could be advanced against the delegation of the power of arrest to the Police in cases of poisoning, while I have been assured by many influential men that the measures would be received with satisfaction, and would materially aid the district officers in their endeavours to grapple effectually with the crime.

Render crime cognizable by Police.

II. The second remedial measure which I would advocate is the issue of injunctions to zemindars and others to destroy the skins of animals regarding which suspicions of foul play exist. I do not think that chamars, as a body, unite to poison cattle; in fact, I believe that, although there are exceptional instances to the contrary, chamars, as a rule, are content to render their hereditary services to cattle owners and to live on the perquisites attached to their burying animals which have been slaughtered or died a natural death. Instructions from the Magistrate of the District are, however, necessary to meet exceptional cases, so that cattle owners, supported by a Government order, can insist on the skins of animals dying under suspicious circumstances being cut up into such small pieces as to render the hide valueless. Some officers have suggested the burial of such animals, as calculated to prevent the increase of cattle poisoning, but I doubt if this arrangement would have the desired effect, inasmuch as a designing chamar could arrange to have the body dug up and removed an hour or two after interment.

Destruction of hides in suspicious cases.

III. The third suggestion I have to offer is similar to that already made by Dr. Walker in his chemical report for the past year. This perhaps partakes more of a means for determining the existence of cattle poisoning than of a measure for its suppression, but still the two are closely connected; for if chamars

Chemical analysis.

N. W. PROVINCES. Captain C. A. Dodd.

see that the Government take so much pains to investigate this crime carefully, fear of detection will increase and perpetration of the offence proportionately diminish. Moreover, from the enquiries which Dr. Walker proposes to institute on each occasion, we shall be able to discover how far poisoning has been mistaken for ordinary causes of death, and in what way the Police would do well to direct their efforts for the prevention of the crime. I quote Dr. Walker's own words: "I would therefore suggest that when the civil authorities of a district are apprised of a sudden increase in the mortality of the cattle of a particular locality, an intelligent native doctor should be sent from the nearest station to make a *post-mortem* examination of a few of the dead animals; and that he be instructed to secure in a bottle a piece of the third stomach and the liver, and one kidney of two or three of the animals he examines, making the bottles over to the Magistrate for despatch to me. Large pieces are not required to determine the point. The pieces from each animal may be accommodated in a clean pickle or tart-fruit bottle, and a little strong country spirit poured over them to prevent decomposition. Until this is done, it will always be open to doubt whether increased mortality arises from disease or from poisoning, as it is always open to designing men, or ignorant sufferers from a prevalent epidemic, to accuse some social pariah of the crime of poisoning the village cattle. This, at least, is just as likely to result in the India of to-day as the burning of decrepit old women under similar circumstances in our own country two hundred years ago."

Law to legislate sale of poisons.

IV. My last suggestion has reference to the existing law, which does not restrict either the possession or sale of poisons, and does not keep suspicious dealers in hides under any surveillance whatever. So long as natives are allowed to sell poisons without license, or to possess them without any satisfactory reason, we must not be surprised at the great facility which exists for the murder of both human beings and animals. The fact of poisonous herbs growing so extensively throughout the country, or being used so often for medical purposes, should not, I think, prevent the possession of them without license, or at any rate explanation from becoming penal.

Restriction in this matter would more or less benefit the whole of the agricultural population in India, whereas such restriction might at the worst be inconvenient, or perhaps oppressive to a few, while it would greatly deprive the professional poisoner of a successful nefarious trade.

There is positively no check now, for though dealers in arsenic may be particular when selling their poisons to or in the presence of district officials, any native can buy them at any time and in any quantity without even the fear of suspicion.

The same remarks apply in a less important degree to dealers in hides. Government might regard the measure I propose as tending to interfere with the interests of trade, or the liberty of its subjects, but I think the regular dealers in hides should be called upon to take out licenses and to keep up daily registers of all their sales and purchases, showing to whom they were sold and from whom they were bought; district authorities, and even Police Officers of rank, should have authority to inspect these books when necessary.

11. I now beg to bring this note to a conclusion, and in doing so to express my regret that this report has not been submitted earlier, and contains but very meagre information on the subject of cattle poisoning. The first is due to the heavy work which fell upon me in connection with the recent Police reductions and the subsequent task of acquiring the details of my new office. The second is caused by my almost entire dependence on reports from Superintendents of Police and other officers, and the absence of any special local enquiry by myself into the history of the crime.

PROVINCE OF OUDH.

KHEREE. G. J. Low, Esq.

Report by G. J. Low, Esq., *District Superintendent of Police, Kheree,—(No.* 274, *dated Fyzabad,* 13*th May* 1870).

States that cattle poisoning was unknown in the province up to February 1869, when in the eastern portion of the Fyzabad District, bordering upon Azimgurh and Jounpore, cases occurred which Mr. Low was specially deputed to enquire into. The Fyzabad poisoners no doubt came from these latter districts. Up to March 1870 no fresh cases had been reported to the Police in addition to those which were the subject of investigation. Mr. Low's report is dated 28th September 1869, and is to the following effect:—In August 1869 two bullocks belonging to Usmapoor had died suddenly, apparently from poisoning. Mussamut Sheomani was suspected, as some pills had been found in her house. She admitted administering poison to the bullocks, stating that she had received the poison from a chamar. An Inspector was deputed to investigate the matter. He discovered that the pills had been obtained from a chamar in the Jounpore District. The Inspector further ascertained that the chamars have two methods of killing cattle; 1*st*, by administering poisonous pills, and, 2*nd*, by thrusting a poisoned needle into a vein behind the animal's ear. A pill sent for examination to the Chemical Examiner was found to be largely composed of white arsenic with a little atta and turmeric to disguise

OUDH.
G. J. Low, Esq.

it. The pills are put in castor-leaves and thrown near where cattle are grazing. They proved fatal in nearly every instance on the second or third day. The needle is rarely resorted to, as it is less certain, and the chances of detection are greater. In February pills were brought into Fyzabad from Azimgurh and Jounpore by chamar hide merchants and distributed to chowkidars, who, of course, neglected to report the matter to the Police. The mortality was at first attributed to cattle plague, but it was observed that young and healthy cattle were always the victims, and on threatening the chamars, the mortality was stopped in some places. The recorded mortality from February to August 1869 was as follows,—50 bullocks, 49 cows, and 43 buffaloes (only one male). Only three of these were poisoned by means of needles. Mr. Low recommends the dismissal of the chowkidars of those villages in which poisoning occurred, and their prosecution for not giving information. The Commissioner of Fyzabad, in forwarding the above, recommended that Mr. Low should be specially deputed to the border of the Fyzabad district to prosecute further inquiries. Orders were issued to this effect by the Chief Commissioner, the co-operation of the District Superintendents of Police of the Azimgurh and Jounpore districts was secured, and Mr. Low, on the 27th January 1870, submits a further report to the following effect :—Ascertained, that the crime of cattle poisoning was more rife than in Azimgurh. In the Fyzabad village, where poisoning had occurred, two chamars were the principal agents. They bought up hides from the village chamars and sent them to the city of Jounpore. The hides are bought from 12 annas to Re. 1, and on the spot sold for Re. 1-8 to Rs. 2 at Jounpore. Since the month of August no reports of cattle being poisoned have been made to the Police, and a zemindar of the locality stated that the crime had been put a stop to. Mr. Low attributes the stoppage of the crime to two causes: 1*st*, the conviction of 4 out of 7 persons prosecuted; and 2*nd*, the dismissal in December of those chowkidars in whose villages the crime had occurred. The motive to committing the crime will be removed by the owners keeping the hides of dead animals and giving the chamars only the flesh. This was the old custom, until the chamars broke through it during the great mortality, and owners were advised to return to the old custom. The Magistrate of Azimgurh had issued a recommendation in his district to the same effect. Captain Fagan, District Superintendent of Police, Jounpore, furnishes Mr. Low with information relating to the crime of cattle poisoning in that district. Most of the information has been already quoted above. Mr. Fagan recommends that the crime should be made cognizable by the Police with a view to secure prompt action, and that the hide merchants should be obliged to take out licenses and keep a daily register of all their sales and purchases. This should be open to inspection by the district authorities, and premises liable to be entered at any moment by a Police Officer not under the grade of Sub-Inspector. Mentions that *arsenic is used in preserving hides.*

From the Officiating Junior Secretary to the Chief Commissioner, Oudh, to the President of the Cattle Plague Commission,—(No. 4046, dated 15th August 1870).

No. 3201, dated 13th July, 1870, from Commissioner, Lucknow.
„ 4013 „ 18th „ from Commissioner, Roy Bareilly.
„ 4236 „ 23rd „ from ditto.
„ 3906 „ 22nd „ from Commissioner, Fyzabad.
„ 3714 „ 5th August, from Commissioner, Seetapore.

In reply to his No. 358, dated 10th June last, is directed to forward copies of the correspondence, noted in the margin, regarding the above.

ROY BAREILLY.
Major J. F. Macandrew.

Memo. from MAJOR J. F. MACANDREW, *Officiating Commissioner, Lucknow Division, to the Secretary to the Chief Commissioner, Oudh,—(No. 3201, dated 13th July 1870).*

In reply to his docket No. 2984, dated 18th ultimo, states that the Deputy Commissioner of Lucknow writes that only one case of cattle poisoning occurred in the district during the past year, and a copy of the Police report respecting it was furnished to President, Cattle Plague Committee, on his recent visit at Lucknow.

The Deputy Commissioners, Oonao and Barabunkee, report that no cases of cattle poisoning have occurred in their districts during last year.

J. Perkins, Esq.

Memo. from J. PERKINS, Esq., *Officiating Commissioner, Roy Bareilly Division, to the Secretary to the Chief Commissioner, Oudh,—(No. 4013, dated 18th July 1870).*

In compliance with his No. 2984, dated 18th ultimo, begs to forward reports of Deputy Commissioners of Roy Bareilly and Sultanpore on the above subject.

The reply from Deputy Commissioner of Pertabgurh will be forwarded immediately on receipt.

ROY BAREILLY. J. Steel, Esq.

From J. STEEL, Esq., *Deputy Commissioner of the Roy Bareilly Division, to the Officiating Commissioner, Roy Bareilly Division,*—(*No.* 1363, *dated* 5*th July* 1870).

I have the honor to acknowledge the receipt of your office endorsement No. 3444 of the 23rd ultimo and its annexures on the subject of cattle poisoning, and to report that at the latter end of 1863 and beginning of 1864 there were a few cases of cattle poisoning reported, in which chamars were suspected of poisoning horned cattle for the sake of their hides. These cases were said to have occurred in the Behar Tehsil, and the method adopted for destroying cattle was the insertion of a plug composed of some waxy substance into the body of the animal. One of these plugs was sent down to Calcutta for analysis by Mr. Crommelin, but the result of the chemical examination is not known from the records; however, from enquiries then made by Mr. Crommelin, it appears that the native idea seemed to be that wax taken from human ears was used for poisoning cattle.

2. A file in the office shows that there were four complaints made by individuals that their cattle had been poisoned, but all these cases fell to the ground, as the perpetrators could not be traced, on which the Commissioner of the Lucknow Division sanctioned the offer of a reward of Rs. 50 for the apprehension and conviction of the offenders; however, nothing further seems to have been done.

3. I beg to state that since 1864 no cases of cattle poisoning have been reported in this district, but further enquiry on the subject is now being made.

SULTANPORE. A. Young, Esq.

Memo. from A. YOUNG, Esq., *Deputy Commissioner of Sultanpore, to the Commissioner, Roy Bareilly Division,*—(*No.* 1375, *dated* 27*th June* 1870).

With reference to Commissioner's No. 3445, dated 23rd instant, reports that no cases of poisoning cattle have been reported in this district during the last twelve months. The attention of the Police has been called to the subject during enquiry into cattle disease, but, so far as is yet known, the practice does not prevail.

PERTABGURH. C. R. Crommelin, Esq.

Memo. from C. R. CROMMELIN, Esq., *Officiating Deputy Commissioner, Pertabgurh, to the Commissioner of the Roy Bareilly Division,*—(*No.* 1589, *dated* 19*th July* 1870).

With reference to his No. 3446 of the 23rd ultimo, begs to submit the abstract of above cases therein called for.

Poisoning of Cattle.

In village Seetapore, Police Station and Tahsil Patty, 30 head of cattle were reported to have been poisoned in the course of 1½ months. Baldi, Rangai, Dabi, and Paltan Chamars, who were grazing the cattle, were suspected of having poisoned the animals with intent to eat them. On opening the stomach of one of these poisoned cattle, a pill of poison was found in it. The case was then reported to the Police, and at the time of enquiry the above defendants admitted having administered poison to two cattle only, *viz.*, a cow and a goat, with intent to eat their flesh. They also named three others as their accomplices, who, however, denied having any knowledge of the matter, and there was no proof of their being concerned in it. The above named Baldi, Rangai, Dabi, and Paltan were sentenced on their own admissions and proof to six months' rigorous imprisonment and Rs. 3 fine each, in default one month more, on the 9th of October 1869. In one case of 5 cattle, by Pundit Kishun Lal, Extra Assistant Commissioner, another charge was brought against the above defendants by another owner of cattle who had lost 4 head, and in this case defendants Baldi and Paltan were sentenced to six months' rigorous imprisonment on their admission that they had given poison to a cow only.

A third charge was brought against the same individuals by the owner who had lost his 6 cattle, but there was no proof, and the defendants denied the charge.

A further case of 11 head of cattle against the above defendants, but for want of proof they could not be convicted.

In the fifth case against the same defendants, two head of cattle were lost, but no proof could be adduced against them.

No proof was produced of what the poison was, nor was any mention of its name made anywhere in the proceedings. The pill said to have been found in the stomach was not sent to Court, nor were the defendants asked what poison they had used.

The Deputy Commissioner on examining the file had asked the Court what had become of the pill found in the stomach, and the Court's reply was that the pill had been destroyed immediately when found.

PERTABGURH. C. R. Crommelin, Esq.

Endorsed by the Officiating Commissioner, Roy Bareilly Division,—(No. 4236, dated 23rd July 1870).

Forwarded to Secretary to Chief Commissioner, Oudh, in continuation of No. 4012, dated 18th instant.

Memo. from P. CARNEGY, Esq., *Officiating Commissioner, Fyzabad Division, to the Officiating Junior Secretary to Chief Commissioner, Oudh,—(No. 3906, dated 22nd July 1870).*

FYZABAD. P. Carnegy, Esq.

In reply to his No. 2984, dated 18th ultimo, begs to state that the facts relating to cattle poisoning in the Fyzabad District were sent to the President, Cattle Plague Commission, in February last by the Deputy Commissioner of Fyzabad. The latter officer now reports that he believes that poisoning is no longer carried on in this district, as, though the District Superintendent offered rewards of Rs. 20 for informers in several places, no information regarding the crime was given.

2. The Deputy Commissioner of Baraitch sends copy of a report by the District Superintendent, who says that no such cases were reported last year, nor are there any cases on record in which the owners of cattle have reported that they suspected they had been poisoned. The late District Superintendent caused frequent enquiries to be made last year into the deaths of cattle, but no case of poisoning came to light.

3. In Gondah no cases have been reported.

Memo. from E. THOMPSON, Esq., *Officiating Commissioner, Seetapore Division, to the Officiating Secretary to Chief Commissioner, Oudh,—(No. 3714, dated 5th August 1870).*

SEETAPORE. E. Thompson, Esq.

In reply to No. 2984, dated 18th June last, intimates that the Deputy Commissioners of this Division report that there have been no cases of cattle poisoning in their respective districts.

Statement showing prosecutions for Cattle Poisoning in the Province of Oudh during the years 1867, 1868, *and* 1869.

DISTRICTS.	1867.						1868.						1869.						REMARKS.
	PROSECUTED.		CONVICTED.		ACQUITTED.		PROSECUTED.		CONVICTED.		ACQUITTED.		PROSECUTED.		CONVICTED.		ACQUITTED.		
	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	Cases.	Persons.	
Lucknow City	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Lucknow District	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	
Oonao ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Barabunkee...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	
Seetapore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hurdui ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Kheree ...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	
Fyzabad ...	...	...	...	...	...	...	...	...	...	...	...	...	3	4	3	4	...	...	
Baraitch ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Gondah ...	...	...	...	...	...	...	.	...	...	...	...	...	...	...	...	...	...	...	
Roy Bareilly	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Sultanpore ...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	
Pertabgurh ...	...	..	...	...	...	...	...	...	...	...	...	...	5	35	2	6	3	29	

R. H. M. AITKEN, *Lieutenant-Colonel,*
Inspector General of Oudh Police.

PUNJAB.

PUNJAB.
Lieut.-Col. J. W. Younghusband.

From LIEUTENANT-COLONEL J. W. YOUNGHUSBAND, C. S. I., *Officiating Inspector General of Police, Punjab, to the President, Cattle Plague Commission,*—(*No.* 2992, *dated* 24*th October* 1870).

In reply to your No. 514 of the 10th October, I have the honor to forward a detailed statement showing the number of offences committed in the Punjab, under Sections 428 and 429 of the Indian Penal Code, for the years 1867, 1868, and 1869.

2. The total offences for this province of this nature have been—

YEARS.	Offences.	Persons convicted.
1865	278	No record.
1866	265	Ditto.
1867	289	163
1868	334	178
1869	296	168

REPORTS REGARDING THE WORKING OF BOMBAY ACT VIII OF 1866.

BOMBAY.
F. H. Souter, Esq.

From F. H. SOUTER, Esq., *Commissioner of Police, to the Acting Secretary to the Government of Bombay, Revenue Department,*—(*No.* 1781, *dated the* 3*rd November* 1868).

With reference to Government Resolution, Revenue Department, No. 4010, dated 28th October 1868, calling for reports as to whether Act VIII of 1866 (to regulate the sale of poisons) has produced any tangible results, and whether it has been found possible to enforce its provisions without oppression, I have the honor to report that the introduction of this Act has not produced any tangible results in Bombay, but no complaints as to the enforcement of its provisions have been made.

2. As, however, large quantities of these poisons are known to be constantly stored in, or passing through Bombay, it is probable that the provisions of the Act are frequently evaded, although no such evasion has yet been brought to light.

W. H. Havelock, Esq.

From W. H. HAVELOCK, Esq., *Acting Revenue and Police Commissioner, Southern Division, to the Chief Secretary to the Government of Bombay,*—(*No.* 181, *dated Camp Yellapore the* 16*th January* 1869).

I have the honor to reply to the Government Resolution No. 4010, dated 28th October 1868, on the subject of the working of Bombay Act VIII of 1866, being an Act to regulate the sale of poisons.

2. From the reports of the several Collectors and Magistrates, of which a summary is appended, it will be seen that the Act has been worked without oppression; but that it has not produced any tangible results, owing principally to the facilities with which poisons may be obtained from interlying villages belonging to Native States, and to the ready manner in which vegetable poisons are procurable generally throughout the country.

3. Some of the Collectors and Magistrates have pointed out certain omissions in the Act; of these, I would commend to the attention of Government those pointed out by Messrs. Boswell, Erskine, and D'Oyly, in view to their being supplied, should a revision of the Act be in contemplation. No doubt the Collector should be empowered to exercise a discretion as to the character of the applicant in granting licenses, and to call for and examine the books whenever required.

Summary of Reports of the Collectors and Magistrates, Southern Division, on the subject of the working of Bombay Act VIII of 1866.

Mr. Bosanquet, Collector and Magistrate of Sattara.

Does not think that the Act facilitates the sale of poisons for criminal purposes, but has rather had the contrary effect. The number of licensed vendors has perceptibly decreased, being at present 8 against 14, the number in 1863-64. He thinks it not improbable, however, that this favorable result is partly attributable to the facilities with which poison

BOMBAY.

can be introduced from the Native States which surround and intermingle with the villages of the district; observes that poisoning human beings does not seem a common crime in this part of the country; at the same time in a country so prolific as this is in vegetable poisons, which are procurable in almost every field, and leave no trace in the stomach, nothing short of an extermination of such plants will effect a reformation. The only change he would propose is, that Collectors should be invested with a discretionary power, which they do not seem to possess under the present Act, of refusing to grant or renew ordinary licenses. In large towns, where there are dispensaries, he suggests that it might be advisable to delegate the sale of poisons to the Hospital Assistant, who is generally a man of character, education, and ability. He adds that no oppression has had to be used for the working of the Act.

W. H. Havelock, Esq.

Though the present law does not facilitate the obtaining of poisons for criminal purposes, yet he thinks it might be improved. He is of opinion that the number of licensed vendors should be, as far as practicable, reduced, and licenses given only to men of character. He suggests that the licenses be given only to the Patells of large towns, who should sell only to people who bring a permit from the Patell of their own village to purchase. The permit should name the purchaser, the substance to be supplied, and the quantity, and the reason why it is required. He adds, that if any person were desirous of poisoning another, he would, in all probability, use some of the vegetable poisons which abound in every hedgerow in the country, in preference to purchasing a mineral poison from the vendors; and thus the law does not appear to have produced any tangible results as far as he is able to state; it has been found always practicable to enforce the law without any oppression.

Mr. E. P. Robertson, Collector & Magistrate of Dharwar.

The number of licenses taken out for the sale of poisons under Act VIII of 1866 has been very small. In 1867 five licenses were taken out, one of which was special. In 1868 four licenses only, all ordinary, were granted. The sale of poisons in this district has been so small that he is not in a position to state whether any tangible results have been produced, and he is not aware that any oppression has been caused by the enforcement of the provisions of the Act.

Mr. Armstrong, Collector and Magistrate of Kulladgee.

The Act has been too short a time in operation to allow any tangible results to appear, or to enable him to judge from practical experience how far it facilitates, or not, the obtaining of poisons for criminal purposes. If, however, it does not facilitate the obtaining of poisons, it certainly does not do much towards preventing it, were persons disposed to obtain poisons for such purposes. The Act does not provide any legal limit to the number of licenses, and so in course of time it is to be expected they will be very common. The amount of fee also for a license is too trifling to act as a check on their number, except in the case of a special license; and what a special license is for, or where, or when, it is to be granted is nowhere defined in the Act. Were the number of licensed vendors restricted, no hardship would be caused to the people, and the Police would undoubtedly be better able in suspicious cases to trace the purchaser, provided the poison was obtained from a licensed vendor, which, however, it is probable would rarely be done in a country where so many vegetable poisons grow wild, and are readily procurable. He would grant licenses to respectable persons only. He adds that the list of poisons in Schedule A appended to the Act is not very compr ehensive, and excludes some that were included under Section 20 of Regulation XIV of 1827. The Schedule might, he thinks, be extended with benefit.

Mr. Boswell, Collector and Magistrate of Rutnagherry.

The Act has been worked without any oppression, but it has not produced any tangible results, as the facilities with which poisons are obtained in the numerous villages of Native States which lie between and border on British territory render the Act almost a dead letter. Cases of poisoning have not diminished since the introduction of the Act, but no cases of the illegal sale of poison have been tried since the Act was passed.

Mr. Gray, Collector and Magistrate of Belgaum.

The provisions of the Act have not been very strictly enforced, the number of licenses applied for has been very small, and he does not believe that any real difficulty will be found in purchasing poisons of certain kinds in districts in which no license has been granted. Mr. Erskine observes that it is almost impossible, as the law now stands, to know whether it is fully acted up to. Section 13 of the Act requires a great deal, but who is to see that this is done? No authority is given to the Collector or to the Police (or any one else) to examine the books of the seller, to see that they are properly kept, and his belief is that the provisions of the law are not attended to, except, perhaps, to a certain extent, in the city of Poona. Mr. Erskine thinks that the law, as it stands, can scarcely be expected to work very well. There are too many restrictions and not sufficient means of knowing that the restrictions are attended to. As he understands Section 5 of the Act, an ordinary license must be granted to any one willing to pay Rs. 5 for it,—discretionary power only being given as regards the special license. Thus, bad characters may easily procure licenses, and what check, in a country where so few can read and write, would the book of sale be on them? They would make all the entries themselves, and might enter anything they liked. He thinks that licenses should only be granted to persons of good character; that the restrictions on sales should be lessened, though the seller should still be bound to enter all sales in a book; and that power to examine this book should rest with certain Officers, who could then examine it regularly, and this might really check the seller, and with his aid probably enable them to do much to put a stop to illicit sales.

Mr. Erskine, Collector and Magistrate of Poona.

BOMBAY.

W. H. Havelock, Esq. Mr. Elphinston, Collector and Magistrate of Canara.

There is little or no sale for poisons in this Collectorate; only about three or four men have taken out ordinary licenses under the Act, and in most instances they have not sold sufficient poisons to pay for the cost of the license. The Canara jungles abound with vegetable poisons, and the object with which licenses are taken out is generally merely to vend paints, such as yellow orpiment for coloring images. Mr. Elphinstone recommends, as the Act does not require any special machinery to work it, that the licenses be granted free, on condition that the vendor be a respectable man, who can read and write, and well able to keep the accounts in the prescribed form.

Mr. D'Oyly, Collector and Magistrate of Ahmednuggur.

The Act has hitherto produced no tangible results owing to the omissions in it, noted below; he doubts whether the provisions of the Act have been fully enforced, but this is still under enquiry. No oppression has been committed under the Act. The omissions in the Act, which Mr. D'Oyly thinks should be supplied, are the following :—

1*st*.—That it should be made optional with the Collector to grant or renew a license to any applicant.

2*nd*.—That the Collector should have power to cancel any license granted, on his becoming convinced that such a step is desirable.

3*rd*.—That authority should be given to the Collector to examine, or authorize in writing any other person to examine, the books kept by vendors.

A. F. Bellasis, Esq.

From A. F. BELLASIS, Esq., *Officiating Commissioner of Police, Northern Division, to the Secretary to the Government of Bombay,—(No.* 155, *dated Camp Veejulpoor, the* 3*rd February* 1869).

I have the honor to acknowledge the receipt of the Government Resolution No. 4010, dated 28th October last, calling for information showing how the Bombay Act VIII of 1866 (to regulate the sale of poisons) has worked; whether it has produced any tangible results; and whether it has been found possible to enforce its provisions without oppression.

2. As the information is required by the Government of India to aid them in legislating for preventing the possession and sale of poisons in the Bengal Presidency, I have given in the accompanying summary the opinion of the several Magistrates and District Superintendents of Police in the Northern Division.

3. From these it will be observed that the working of the Act has never been found to be oppressive, and most of the Magistrates and Superintendents of Police are agreed that the Act is precautionary, and that it conduces to exercise a wholesome check. This is the more observable in districts little intermingled with Foreign States, but in Guzerat, where Guickwaree towns and villages are thickly interspersed with British territory, the check can be very slight.

4. I concur with the Magistrates of Surat and Broach, and with the Superintendent of Police, Khandeish, in the opinion that the Act might, with advantage, be made still more restrictive, and I think their suggestions are worthy of adoption in framing any new Act.

Memorandum—Containing the replies of the Officers of the Northern Division to the Government Resolution No. 4010, *dated* 28*th October* 1868, *forwarding a copy of a letter from the Government of India requiring information as to how the Bombay Act VIII of* 1866 (*to regulate the sale of poisons*) *has worked; whether it has produced any tangible results; and whether it has been found possible to enforce its provisions without oppression.*

r. Borradaile, Acting Magistrate.

Ahmedabad.—"The Act has produced no result in this zillah, and the enforcement of its provisions is by no means oppressive.

"In such a District as Ahmedabad, intermingled with foreign territory, it is, and will continue to be, a simple matter to obtain poison; no legislation can prevent this; and naturally a man wishing to poison his neighbour, or a wife, or husband, will not expose himself to the elaborate system of entry in the retailer's books devised for his detection.

"It would be advisable, perhaps, to make penal the possession of any poison named in Schedule A. not purchased from a licensed vendor."

Captain Segrave, Superintendent of Police.

"From the records of this office there is nothing to show that the Act in question has produced any tangible result, or that, since the promulgation of the Act, crimes under the head of poisoning have either increased or decreased,—only one case being reported in each of the years 1866, 1867. Though the Act in question prevents the promiscuous sale of poisons in British territory, still it does not hinder a person in a district like the Ahmedabad Zillah, which is almost surrounded by Native States, from procuring poison. Should he wish to do so, he has only to go across the Frontier, and he can obtain as much as he likes. With a view

BOMBAY.

to prevent persons purchasing poisons in Native States, and bringing the same into British territory, I would suggest the necessity of another clause being added to the Act, *viz.*— A. F. Bellasis, Esq.

"'No person, without a special order from the Magistrate of the District, shall be allowed to bring into British territory any of the poisons mentioned in the Schedule of this Act.'

"Any person found with poison in his possession shall be bound under certain penalties to satisfactorily account for the same, and that he has purchased it from a licensed vendor.

"I don't think there is anything in the provisions of this Act which is in any way oppressive."

Kaira.—"The provisions of the Act have been applied in these districts without trouble or even remark by the people; but I have no kind of data from which to pronounce an opinion as to the real effect of the Act to compass the objects for which it was intended. I must hazard a remark, however, that I am not able to perceive how enactments of this sort can have the restrictive effect they are intended for. I know nothing which could practically prevent large quantities of arsenic, or any other poison, being sold anywhere in India." Mr. Elliot, Magistrate.

"From a Police point of view, and as regards this district, the Act in question is virtually inoperative. Lieutenant Daniell, Superintendent of Police.

"Dhatoora is plentiful all over the district, and the poison can be extracted and used by the most ignorant. Other vegetable poisons are also available, but the preparation of these require a certain amount of knowledge.

"If, however, a person wishes to purchase poison with any ill intent, he can procure it in any quantity from one of the numerous Guicowaree towns or large villages with which this district is so plentifully besprinkled.

"Where persons wish to purchase poison in small quantities for medical purposes, they obtain it from the licensed poison vendor, and, from the enquiries I have made, I believe that the provisions of the Act are enforced without oppression in the case where people can obtain poison, if they please, without purchasing it from licensed vendors."

Punch Mehals.—"Act VIII of 1866 has not been formally introduced into the Punch Mehals, but under its spirit licenses for sale of poisonous substances have been issued since 1867, and accounts kept agreeably to Section 13. Mr. Propert, Agent for the Governor.

"From the reports of the local Native Officers, I find that no difficulty has been experienced in carrying out the provisions of the Act, nor any complaint against them received from the people, but, on the contrary, they facilitate the detection of suspicious cases and exercise a wholesome check on the purchase of poison for unlawful purposes. I am myself of the same opinion, and consider that no alterations in the present Act are necessary."

"Licenses have only been taken out by eight men in these districts, as follows:— Lieutenant Wilson, Superintendent of Police.

Godra	...	...	...	3
Kalole	...	...	...	1
Veejulpore	...	...	...	1
Halole	...	...	...	1
Dahud	...	...	...	1
Ghalode	...	...	...	1
			Total ...	8

"The provisions of the Act do not appear to have been strictly carried out in every instance, but there has been no difficulty or oppression in enforcing its provisions where it has been acted up to."

Surat.—"The present law (Bombay Act VIII of 1866) works tolerably well on the whole at the places where there are licenses to be found. These, however, are so very few in number (there is not a single one in the Sub-Collectorate), that there cannot be the least doubt that the sale of poisons is for the most part practically unrestricted. I consider that there should be a license in every kusba town and subordinate town of 3,000 inhabitants. Mr. Hope, Magistrate.

"My Assistants and Deputies, to whom I referred your circular for opinion, suggest the following additions to the Act, in which I concur:—

"'I.—The Police should be empowered to search without warrant the house of any person suspected to have in his possession poison surreptitiously obtained.

"'II.—It should be provided in the Act that persons found in possession of poisons, who are unable to prove that they have got them from licensed vendors, should be liable to punishment. To render this possible, it might be likewise enacted that vendors shall give a pass or token to purchasers of poisons.

"'III.—Sindoor or red-lead should be added to Schedule A of the Act. It is commonly used by the natives as a poison.

BOMBAY.

A. F. Bellasis, Esq.

"'IV.—Licensed vendors should be required to submit their books for periodical inspection to the Collector, or Assistant or Deputy Collector. This will insure strictness and punctuality.

"'V.—Importation of poisons from Native States should be checked by requiring the importers to declare the quantity they wish to import, and the purpose for which it is intended. This Collectorate is greatly interlaced with foreign territory, and some such provision is requisite.

"'VI.—Surgeons or Sub-Assistant Surgeons, wherever available, should superintend the sale of poisons.'"

Major Shortt, Superintendent of Police.

"I cannot find its provisions have been so enforced as to cause any oppression; but, to make the Act of greater use, I consider the Collector might authorize the Superintendent of Police to issue the licenses, and then the books of sales of poisons would be periodically inspected; but in India vegetable poisons are so easily procurable that legislation is not, in my opinion, ever to be of much avail in preventing murder by poison, while the provisions of the Act may be of service in preventing accidental poisoning."

Mr. J. W. Robertson, Magistrate.

Tanna.—"The statistical information of this Department in respect to crime does not show that the existing law (Act VIII of 1866), regulating the retail sale of poisonous substances, in any way facilitates the obtaining of poisons for criminal purposes; as far as can be judged of the Act, it evidently meets all the requirements which necessitated its becoming law.

"The facility that exists for obtaining mineral as well as vegetable poisons of one kind or another scattered throughout the country, equally efficacious and subtle to those enumerated in the Schedule of the Act, precludes the necessity of the poisoner resorting to the retail dealer to supply himself with the means with which to carry out his secret designs. However stringent the provisions of the law may be, it necessarily must fail in being able to deprive the poisoner of the means of obtaining poisons, as both the vegetable and mineral kingdoms abound with them in most of the country.

"Little inconvenience, I apprehend, would result to the community by a reduction of the licenses granted. Every means is adopted to grant the licenses to respectable persons only under the present system. What more can be desired I am at a loss to understand, as only certain classes of the population will undertake its sale; other classes of traders would refuse to do so. Section 13 of the Act compels the keeping of accounts of sale, together with particulars of to whom sold, &c.; the Police have therefore every scope afforded them, under the existing law, to trace all purchasers of poison."

Major Coles, Superintendent of Police.

"The provisions of the Act have been enforced, as far as I can learn, without difficulty or opposition.

"The cases of poisoning in the district have been so few,—only two, one of which was supposed suicide,—that the Superintendent cannot form any judgment as to the results of the Act in question; but he is of opinion that there can be no question as to the benefit of the same."

Mr. Sheppard, Acting Magistrate.

Khandeish.—"Concurs in Captain Probyn's views. Poisoning is far less common than formerly, and when the crime does occur, it is commonly found that the substance employed has been Dhatoora, which is procurable in every jungle, or broken or ground glass. As a preventive measure, therefore, the Act in question has probably not produced any very tangible results. At the same time, its provisions are undoubtedly calculated to be precautionary, and therefore useful; and the undersigned has never heard of any complaint on the subject, and has no reason to believe that they are considered oppressive."

Captain Probyn, Superintendent of Police.

"The Act does not appear to have had any effect with regard to the crime of poisoning in the zillah. The crime returns show that in 1866 there were five cases of poisoning. Last year there were only three, while this year, up to the present time, I do not think we have had any case at all. I do not, however, attribute this slight reduction of the offence solely to the introduction of the Act referred to, but rather to other causes such as influence the fluctuation of the crime of murder from one year and another.

"No complaints of hardship, consequent on the introduction of the Act, have reached my ears during my tour in the districts; neither can there be any inconvenience, provided a sufficient number of licenses to sell poison are granted, and judiciously distributed through the province.

"The form given in Schedule C does not appear to me sufficient to secure the object in view, which I understand is to place a more complete check on the indiscriminate sale of poisonous substances. The form referred to gives every information excepting with regard to the total quantity of poison on hand, so that there is no means to detect vendors who may sell poison and make no entries at all. During an enquiry I made in 1866, I found that some of the vendors, if their accounts were correct, had not sold poison even to the amount they had paid for their licenses.

"Had the law obliged them to register the quantity of poison on hand when their licenses were issued, an examination of the poison on hand at the end of the year, or any intermediate time, would show whether the intermediate entries of sale of poisons were correct or otherwise."

From COLONEL *Sir* W. L. MEREWETHER, K. C. S. I. *and* C. B., *Commissioner in Sind, to His Excellency the Right Hon'ble the Governor and President in Council, Bombay,—(No.* 228, *dated 3rd February* 1869*).*

Referring to Government Resolution No. 4010, dated the 28th October 1868, I have the honor to report, for the information of your Excellency in Council, that Bombay Act VIII of 1866 has affected the revenue from the sale of poisons, and that it may, therefore, be considered to have worked successfully as a restrictive measure. The Collector of Hyderabad reports that the revenue on the above account in his Collectorate from August 1866 to July 1867 amounted to Rs. 2,989, whilst from September 1867 to December 1868 Rs. 125 only was realized. The decrease is attributed by the Collectors of Hyderabad and Shikarpore to the exclusion from the Schedule attached to the Act of the poisons chiefly in demand, *viz.*, antimony, red-lead, and sugar of lead.

2. The provisions of the Act appear to have been enforced without difficulty.

APPENDIX No. V.

PAPERS REGARDING THE SANITARY TREATMENT OF EPIZOOTICS AND SPECIAL LEGISLATION.

PAPERS ON THE SANITARY TREATMENT OF EPIZOOTICS.

Index of Records.

Page.

1. Hon'ble A. Eden, Secretary to the Government of Bengal, No. 808, dated 21st June 1869.—*Draws the attention of the Government of India to the great prevalence of cattle murrain in the Lower Provinces, and proposes a permanent Veterinary Establishment* 749

2. Bengal Government Circular No. 809, dated 21st June 1869.—*To all Commissioners. Enquires whether the Police can without any special legislation enforce a few simple rules regarding segregation and burial of diseased cattle* 749

Replies to Circular No. 809, dated 21st June 1869.

3.	Rivers Thompson, Esq.,	Commissioner,	Presidency Division	...	...	... 749
4.	E. W. Molony, Esq.	„	Orissa	„	...	... 750
5.	F. B. Simson, Esq.	„	Dacca	„	...	... 750
6.	Lord H. Ulick-Browne	„	Chittagong	„	...	... 752
7.	C. T. Buckland, Esq.	„	Burdwan	„	...	... 752
8.	Col. E. T. Dalton, C. S. I.	„	Chota Nagpore	„	...	.. 753
9.	R. P. Jenkins, Esq.	„	Patna	„	..	... 753
10.	J. W. Dalrymple, Esq.	„	Bhaugulpore	„	...	... 755
11.	C. E. Lance, Esq.	„	Rajshahye	„	...	... 755
12.	Col. J. C. Haughton, C. S. I.	„	Cooch Behar	„	...	... 755
13.	Lieut.-Col. W. Agnew	„	Assam	„	...	... 756

14. Hon'ble A. Eden, Secretary to the Government of Bengal, No. 2119, dated 9th October 1869.—*Soliciting an expression of opinion by the Supreme Government on the question of special legislation and the training of a skilled agency* 758

15. A. H. Blechynden, Esq., Secretary to the Agricultural and Horticultural Society, dated 20th September 1869.—*Communicates the views of the Council regarding special legislation, and submits a rough draft of an Act* 760

16. Madras Act No. II of 1866 764

Page.

INDEX OF RECORDS.

17. Bengal Government Circular No. 2122, dated 9th October 1869.—*To all Commissioners. Circulates Nos.* 14, 15, *and* 16, *and requests an expression of opinion on the form legislation should assume and the machinery by which a special law could be worked; also on the source of funds* 766

Replies to Circular No. 2122, dated 9th October 1869.

18. Horace A. Cockerell, Esq., Commissioner, Presidency Division 766
19. E. W. Molony, Esq. „ Orissa „ 768
20. F. B. Simson, Esq. „ Dacca „ 769
21. Lord H. Ulick-Browne „ Chittagong „ 772
22. C. T. Buckland, Esq. „ Burdwan „ 773
23. Col. E. T. Dalton, C. S. I. „ Chota Nagpore „ 777
24. R. P. Jenkins, Esq. „ Patna „ 784
25. J. W. Dalrymple, Esq. „ Bhaugulpore „ 786
26. C. E. Lance, Esq. „ Rajshahye „ 788
27. Col. J. C. Haughton, C. S. I. „ Cooch Behar „ 792
28. Lieut.-Col. W. Agnew „ Assam „ 793

29. Dr. K. McLeod, Assistant Surgeon, Bengal Medical Service, dated 7th October 1869.—*Report on the sanitary treatment of epizootics* 799

30. A. Mackenzie, Esq., Officiating Junior Secretary to the Government of Bengal, No. 2123, dated 9th October 1869.—*Writes to the Madras Government and asks how Act II of* 1866 *has worked* 813

31. J. W. Dalyell, Esq., Acting Secretary to the Government of Madras, No. 3198, dated 16th December 1869.—*Replies that recourse to law is considered neither expedient nor necessary* 813

32. Baboo Hem Chunder Kerr.—*Notes on the Hindu prejudices as regards cattle* 814

BENGAL.

From the HON'BLE A. EDEN, *Secretary to the Govt. of Bengal, Judicial Department, to the Secretary to the Govt. of India, Home Dept.,—(No. 808, dated 21st June 1869).* Hon'ble A. Eden.

Murrain in the 24-Pergunnahs.

In July last the Officiating Commissioner of the Presidency Division reported the great prevalence of cattle disease in the Diamond Harbour Sub-division, and recommended that a Veterinary Surgeon might be deputed to the place. An application was accordingly made to the Military Department, and the services of Mr. H. Farrell were placed at the disposal of this Government.

2. The enclosed copy of a communication* from the Officiating Commissioner of the Presidency Division gives particulars of the outbreak, and contains Mr. Farrell's report of his proceedings.

* No. 144, dated 14th ultimo, and enclosures.

Cattle disease on the increase.

3. Since the epidemic, on which Mr. Farrell's report is based, two outbreaks of cattle disease have occurred in the 24-Pergunnahs, and Mr. Farrell is now employed in doing what he can to check this disease in the Soonderbuns. Besides this, several outbreaks have occurred in other districts, and the loss which is entailed upon the agricultural industry of the Lower Provinces is becoming yearly more alarming. The matter is, moreover, one of such importance to the country that, in the Lieutenant Governor's opinion, Government is bound to incur any reasonable expense in endeavouring to check it.

Special agency.

4. His Honor therefore proposes to apply permanently for the services of Mr. Farrell, and would then permit him to engage twenty Salootries or Native Farriers (some of whom are, he says, men of considerable experience and promise) and train them thoroughly in the treatment of all these cattle murrains, and in a knowledge of the preventive measures necessary for stamping the disease out.

Subordinate Veterinary Establishment.

5. These men Mr. Farrell should take with him to any district to which he is sent by Government, and give them a thorough practical training. They will then form the nucleus of a Subordinate Veterinary Establishment, which might be employed by Government in all parts of the country in advising the villagers in outbreaks of cattle disease; and by degrees a general knowledge of the course of treatment and prevention, which should be followed in such cases, would get diffused abroad, and zemindars and others might perhaps be induced to send men to Mr. Farrell to go through a course of instruction. Hereafter, possibly, a self-supporting or nearly self-supporting Veterinary School might be formed,—an institution that is really very much wanted in India.

6. The scheme, the outline of which is here sketched, can be elaborated in consultation with district officers, if it meets with the approval of the Government of India. Meanwhile, the Divisional Commissioners have been consulted as to whether the Police can without special legislation enforce a few simple rules in regard to the segregation of diseased animals, the scoring of the hides of cattle that have died of the disease so as to render them useless for sale, and the burial of the carcasses.

Circular from A. MACKENZIE, Esq., *Offg. Junior Secretary to the Government of Bengal, to all Commissioners,—(No. 809, dated 21st June 1869).* A. Mackenzie, Esq.

In consequence of frequent outbreaks of cattle disease in various parts of the Lower Provinces, the Lieutenant Governor proposes to issue a few simple orders for the guidance of the Police in regard to the segregation of diseased animals, the scoring of the hides of cattle that have died of the disease so as to make them useless for sale, and the burial of the bodies.

2. His Honor is of opinion that such measures might be enforced by the Police without any special legislation, but on this point I am to request an expression of your views.

PRESIDENCY DIVISION.

PRESIDENCY DIVISION.

From RIVERS THOMPSON, Esq., *Offg. Commissioner of the Presidency Division, to the Secretary to the Govt. of Bengal, Judicial Dept.,—(No. 42, dated 20th July 1869).* Rivers Thompson, Esq.

I have the honor to acknowledge the receipt of your letter No. 809, dated 21st June last, requesting the expressions of my opinion whether rules issued by the Government for the guidance of the Police, with reference to the isolation of diseased cattle, the scoring of the hides of animals which have died of disease, and the burial of their bodies, might not be enforced without special legislation.

Special legislation necessary.

2. I am not aware of any law at present in force which would directly meet the difficulty. It is clear that the provisions of section 269 and the following sections of the Indian Penal Code have reference only to acts likely to spread infection dangerous to *human* life, and would not apply here; nor do I think the definition of public nuisance, as laid down in section 268 of the Penal Code, is sufficiently appropriate to the case under consideration, to justify the prevention

PRESIDENCY.

Rivers Thompson, Esq.

of the evils which threaten from the spread of cattle disease, by the action of the Police. Clearly a Magistrate could not take order for the prevention of such acts as those which are referred to under section 62 of the Criminal Procedure Code.

3. I believe in England the dangers arising from contagious diseases among cattle are invariably met by special legislation, and I fear, however remote the chances of opposition to Government orders may be, that acts of the Police, under any such rules, not having the sanction of law, could not be enforced by the executive authorities in case of resistance.

ORISSA.

ORISSA DIVISION.

E. W. Molony, Esq.

From E. W. MOLONY, Esq., *Offg. Commr. of the Orissa Division, to the Offg. Junior Secy. to the Govt. of Bengal, Judicial Dept.,—(No.* 258, *dated* 11*th August* 1869).

I have the honor to reply as follows to your No. 809, dated the 21st of June.

Present law sufficient.

2. Mr. Beames is of opinion that the measures proposed may be carried out without any further legislation, provided the Magistrate issues orders under section 62 of the Procedure Code. Disobedience of these orders, he considers, might be punished under sections 269, 270, and 188 of the Penal Code.

Special legislation not necessary nor desirable.

Segregation.

3. Mr. Geddes is of opinion that special legislation is neither necessary nor desirable. He thinks the Police would be authorized in interfering to insist upon the segregation of cattle, and that that measure is one of the greatest importance. He is opposed to burying, but advocates the issue of rules enjoining the scoring of hides. He thinks that, as regards segregation and the scoring of hides, the popular feeling would be in our favor. He states there is a general feeling against the flaying of cattle which die of the disease called "thakurani" or "bussunt" (small-pox), for fear of releasing the demon which is supposed to have taken possession of the beast.

Skinning.

Burying objectionable.

4. Mr. Macpherson is of opinion, after consulting Mr. Lacey, the District Superintendent, and the sub-divisional officers, that burying is an objectionable alternative; and that the ordinary way of disposing of carcasses is far better, *viz.*, by leaving them to the jackals and vultures.

Special legislation not advisable.

5. With regard to the other measures, he thinks they could not be carried out with any practical success without special legislation, until the village communities are impressed with the benefits to be derived from the proposed measures, which is not the case at present.

Burial objected to.

6. My own opinion on the matter is, that burial of the carcasses is likely to lead to more real danger by polluting the air and water than it is intended to avert; when one recollects the very imperfect way in which the burial of human remains is carried out in the Mussulman villages of Bengal, one cannot expect any greater degree of care with cattle; and I agree with Mr. Lacey that it may be taken for granted that the burial, if insisted on, will be anything but thorough. With reference to segregation and the scoring of hides, I do not think that in the present state of the law the people can be forced to carry them out; the order under section 62 must be addressed to an individual, and not to the community at large, and would be quite inoperative as regards effecting the object of segregation, and would, I think, be inapplicable to the scoring of hides. I think myself that it would be undesirable to enact a law rendering the proposed measures compulsory, and that it would be most unpopular.

Segregation and scoring hides cannot be now compelled.

Educating the people.

7. It would, besides all this, be ineffectual until the general sense of the people was in favor of the measure, more especially as the carrying out of any rules would entail considerable expense and trouble on those who have to conform to them.

DACCA.

DACCA DIVISION.

F. B. Simson, Esq.

From F. B. SIMSON, Esq., *Commissioner of the Dacca Division, to the Offg. Junior Secy. to the Govt. of Bengal, Judicial Dept.,—(No.* 367, *dated* 9*th August* 1869).

I have the honor to inform you that on receipt of your No. 809 of 21st of June, I took the opinions of all my Magistrates on the question. Mr. O'Kinealy discusses the matter entirely from a legal point of view, and I forward a copy of his letter. The other Magistrates were unanimous in stating that the Police alone could enforce any such rules, and that the present force of Police would be quite unequal to the task. The Magistrate of Backergunge said, special legal enactment would be requisite for his district, where every act of the Police would be the ground of one, if not more, lawsuits. The Magistrate of Dacca considered that the heads of villages, as referred to in the Chowkeedary Act now before the Legislative Council of Bengal, might, perhaps, be made available. The Magistrate of Furreedpore considered nothing but absolute slaughter of infected animals would effect radical good; and he proposed compensation from some fund resembling the county-rate in England.

Present law insufficient.

Headmen.

Slaughter.

Compensation.

DACCA DIVISION.
F. B. Simson, Esq.

2. I have the honor to add a few remarks of my own, but it is a subject on which I have no practical knowledge. If the evil is to be stamped out effectually, I think absolute slaughter would be the best plan, and I would charge the value of the animals slaughtered to the per- gunnahs or villages to which the diseased cattle belonged at a minimum value per head. I, however, much doubt if this radical proposition is feasible; it was for a time carried out in England.

Slaughter approved of.

3. If the hides are capable of communicating the disease, I think they should be entirely destroyed by burning or cutting to pieces. Scoring, in my opinion, would be insufficient. I doubt if burial of the dead bodies would be enforced, save after segregation. Except when the plague is great, I should think the vultures and jackals would consume the carcasses, and thus dispose of them less objectionably than by burying, probably at a shallow depth.

Destruction of hides.

Burial objected to.

4. The people could only be made to attend to the order, in my opinion, by enforcement of section 188 of the Penal Code; and before this can be effectually done, the District Judges must be instructed to refrain from harmful interference. If in every case they are to say—1st, as there is no complaint, the District Magistrate must try every case himself; 2nd, that full legal evidence to publication of order and every detail must be established in each case; 3rd, that full and ample time must be given for defence and summoning of witnesses for it; 4th, if they determine to refer to the High Court each order in which irregularity can be found in the procedure,—under such circumstances it will be impossible to carry out the rules, be they ever so simple, especially in a district like Backergunge.

Present law might avail if, &c.

5. The present Police cannot do the proposed work in the Mofussil; they can scarcely serve the numerous summonses now entrusted to them, and in some of my districts all the best Police have been drafted to the Looshai frontier, where they are still detained. In Backergunge, any such duties, if undertaken by the Police, will at once be opposed by the body of the people.

Police have enough of work already.

6. If the services of landlords, talookdars, gomashtahs, naibs, punchayets, school masters, and priests can be enlisted, these people might enforce attention generally to simple rules; and if they would assist the Police, instead of opposing them, the object might be attained.

Co-operation of people.

7. If by these persons it could be made known to the generality of the people that segregation would stop disease (which I doubt), or if absolute slaughter, with some compensation, should be the rule, and its acceptation feasible, spread of disease might be prevented; and natives generally, and Hindoos especially, ought not to be averse to action for the preservation of a useful and venerated tribe of animals.

Education of people.

8. To carry segregation out properly, special Police would, I think, in accordance with all my Magistrates, be absolutely necessary; and to enforce anything like absolute slaughter without some compensation would be terribly objectionable to the poorer classes. But if the evil is to be grappled with, I would not shrink from the difficulty; a tract of country should first be declared infected; a small body of Police to remove the plague should be specially appointed; rules for segregation should be laid down; after segregation all animals showing symptoms of disease should be slaughtered; compensation should be paid at a minimum rate; expenses of the above arrangements should be paid for by the inhabitants of the country declared infected.

Segregation—special Police.

Proclamation.

Segregation.

Slaughter—compensation.

9. I would appoint, temporarily, for the special purpose, persons from the present Police force, putting in their place for ordinary Police duties temporary recruits.

10. Suspected animals should be removed to prepared pounds or places for examination; there they should be examined by competent persons, and either restored after a time as free from liability to communicate infection, or slaughtered.

Suspected animals.

11. At the close of every month the value of cattle slaughtered should be calculated, together with the cost of Police and the amount assessed on the villages and chief landed proprietors of the infected tract of country, and summary powers to levy this assessment should be given to district officers. Certificates of cattle slaughtered should be given to their owners, and the value should be paid by the district officers.

Compensation levied by assessment.

12. I see that the above rules go beyond the Lieutenant Governor's proposal for "a few simple orders," and therefore I will not enlarge further on the matter; but I am convinced that, without full legal arrangement, any attempt to effect good by mere order to the Police and Magistrate will not seldom give occasion for much extortion, and the orders will, in some districts, be so vigorously opposed by the people, that they will be useless for good, and conducive only to trouble and increased litigation.

Special legislation necessary.

13. In the city of Dacca and in some of the larger towns where sub-divisional officers sit, segregation and prohibition of sale of skins of animals which die of disease might be enforced more easily by the Police appointed under Act VI of 1868 of municipal laws. Those in the Mofussil, traders in hides, might be ordered to abstain from purchasing fresh hides of diseased cattle, under penalties in accordance with section 188; but to do this effectually, the penalty should in each case be given to the informer.

Municipalities.

MYMENSING.

J. O'Kinealy, Esq.

From J. O'KINEALY, Esq., *Officiating Magistrate of Mymensing, to the Commissioner of the Dacca Division,*—(*No.* 323, *dated* 30*th July* 1869).

With reference to your memorandum No. 310, dated 29th June 1869, I have the honor to inform you that the matter referred for report is whether, under the existing state of the law, it is possible to issue orders for the segregation of diseased animals, the scoring of the hides of cattle that have died of the disease so as to make them unfit for sale, and the burial of the bodies.

2. The only laws at present to go upon are the Criminal Procedure and Penal Code, and I purpose showing how far they can be made available.

Section 62, I. P. C. Meaning of "injury."

3. By section 62, Procedure Code, any Magistrate may issue an order directing a person to take certain order with any animal under his charge, when such directions tend to prevent *injury* to any person lawfully employed.

4. There is no definition of "injury" in the Procedure Code; but if it be interpreted by the meaning of the term given in section 44 of the Penal Code, I think a Magistrate possesses large power to prevent the spread of infectious disease among cattle.

Section 268, I. P. C. Public nuisance.

5. By section 268 a public nuisance is defined, and by section 290 a public nuisance in general is made punishable. The question is, whether allowing diseased cattle to go abroad amounts to a public nuisance or not.

6. As far as I can see, I think it would in many, but not in all, cases.

7. There are no decisions to refer to in Indian Courts; but the decisions of the Courts of England, which are based on a somewhat similar law, support this opinion.

English precedent.

8. It has been decided that placing putrid carrion on the highway (4 Went., 213), keeping a corpse unburied (Regulation V., Vane, 2, Went., C. 231), bringing a horse with glanders into a public place (Regulation V., Lister 1, Dears and B. C. C. 209) amount to public nuisances, and I conceive that the spirit of these judgments would render a person who exposed similar things in India liable to punishment under section 290 of the Penal Code.

9. In none of these cases have the Police power to interfere (see Schedule, Procedure Code, section 290), and I conceive that the action of the Police at present must be confined to reporting such offences, or prosecuting them under section 24, Act V, 1861.

Special law.

10. In conclusion, I would remark that though the law of nuisance is somewhat wide in England more than in India, yet the legislature has considered it necessary to pass a special law in connection with the contagious diseases of cattle.

11. There is no special law in India.

CHITTAGONG DIVISION.

CHITTAGONG.

Lord H. Ulick-Browne.

From LORD H. ULICK-BROWNE, *Offg. Commissioner of the Chittagong Division, to the Secretary to the Government of Bengal, General Department,*—(*No.* 136, *dated* 2*nd August* 1869).

I have the honor to acknowledge the receipt of your letter No. 809 of the 21st June last, on the subject of the segregation of diseased animals, &c., and to reply as follows.

Opinions of Magistrates.

2. Mr. Pawsey, the Magistrate of Chittagong, thinks that such orders as are specified in the Junior Secretary's letter might be enforced without special legislation. Mr. Hime, of Tipperah, thinks that section 62 of the Criminal Procedure Code would apply; and Mr. Whinfield, of Noacolly, thinks that such orders could not be enforced unless a Magistrate has the power of punishing recusants.

Present law insufficient.

3. I myself have very great doubts whether such orders would be obeyed, unless section 62 is applicable. That section might be tried here and there first, and in case of disobedience a fine inflicted under section 188, Penal Code, and then an appeal to the Judge would settle the point. But the general policy of Government in the Lower Provinces during the last fifteen years has been such that the personal influence of district officers has almost entirely disappeared under it, and I do not think that such orders would be obeyed in Bengal Proper, save in exceptional cases.

BURDWAN DIVISION.

BURDWAN.

C. T. Buckland, Esq.

From C. T. BUCKLAND, Esq., *Officiating Commissioner of the Burdwan Division, to the Secretary to the Government of Bengal, Judicial Department,*—(*No.* 203, *dated* 16*th August* 1869).

I have the honor to acknowledge the receipt of your No. 809 of 21st June, and having consulted the District Magistrates, I beg to report as follows.

Legislation not necessary.

2. The Magistrate of Hooghly thinks that no special legislation is needed, and any measures suggested can be enforced by the Police.

3. The Magistrate of Midnapore is of the same opinion as the Magistrate of Hooghly. He thinks that an order under section 62, Code of Criminal Procedure, would be valid; but

he adds that the issue of general orders might lead to oppression, and that they should be local and temporary, and confined to places in which cattle murrain is known to exist. BURDWAN. C. T. Buckland, Esq.

4. The Magistrate of Burdwan expresses a difficulty at not having been made acquainted with the orders which it is proposed to issue. He considers that legislation is requisite if any penalty is to attach to a breach of the proposed rules. He doubts if a Magistrate could lawfully issue an order under section 62, Code of Criminal Procedure, directing any person to segregate diseased animals.

5. The Magistrate of Beerbhoom is of opinion that no general order could be issued under the existing law, but that each case might be dealt with separately, if carelessness in segregating diseased cattle is treated as a public nuisance, under section 268, Penal Code, so as to allow of the issue of an order under section 62 or 63, Code of Criminal Procedure. He points out great difficulties about scoring the hides of dead cattle and burying their bodies, and he adds that the district police have already tried ineffectually to have the hides of dead cattle scored.

6. The Magistrate of Howrah is of opinion that the Police might deal with the case, if the omission to segregate diseased cattle is held to be a public nuisance.

7. The Magistrate of Bancoorah is of opinion that express legislation is necessary, and he considers that section 62, Code of Criminal Procedure, cannot apply to the case. He also remarks that sections 269 and 270, Penal Code, apply only to diseases dangerous to human life.

8. I think that there is much reason shown for special legislation on the subject. In the absence of specific information as to the few simple orders which the Lieutenant Governor proposes to issue, it is of course not possible to form an absolute opinion. But the wide divergence of opinion between six District Magistrates of about equal ability and experience shows how open the law is to doubt at present, and the effect of the decisions of the Judicial Courts, as shown in the case of Horimohun Mole, page 20, Bengal Law Reports, 20th November 1868, and in other cases, tends undoubtedly to restrict the action of Magistrates under section 62, Code of Criminal Procedure. Special legislation necessary. Present law open to doubt.

9. I have now received your office No. 1426 of 4th instant; but, pending further orders, I think it might lead to some misapprehension if that letter were communicated to the District Magistrates until the previous inquiry is disposed of.

CHOTA NAGPORE DIVISION. CHOTA NAGPORE.

From COLONEL E. T. DALTON, C. S. I., *Commissioner of Chota Nagpore, to the Officiating Junior Secretary to the Government of Bengal,—(No. 2050, dated 16th July 1869).* Colonel E. T. Dalton, C. S. I.

In reply to your Circular No. 809 of the 21st ultimo, I have the honor to state that such rules as His Honor contemplates promulgating regarding cattle that have died of epizootic disease would be useful, and might, I consider, be enforced under sections 271 and 268 of the Indian Penal Code. Special law not necessary.

2. The Deputy Commissioners of this Province are all of opinion that no special regulation on the subject is necessary, except Captain Money, Deputy Commissioner, but he does not explain why he considers the law insufficient to warrant their enforcement.

PATNA DIVISION. PATNA.

From R. P. JENKINS, Esq., *Commissioner of the Patna Division, to the Secretary to the Government of Bengal, Revenue Department,—(No. 336, dated 9th September 1869).* R. P. Jenkins, Esq.

With reference to your letter No. 809, dated 21st June last, requesting an expression of my views on the subject of the segregation of diseased animals, I have the honor to submit the following report.

2. The question being one of great importance, it will be best, before stating my own opinion, to notice various suggestions made by the district officers, all of whom have been consulted in the matter.

3. The Magistrate of Chumparun enumerates three classes of persons with reference to whom special rules should, he thinks, be framed :—

I.—Indigo planters.
II.—Farmers of charsa mehals.
III.—Butchers.

The disease which most frequently appears amongst factory cattle is of a nature similar to that which has of late years appeared in England. It is very infectious, and when once it appears, quickly carries off whole herds. No rules, however, are suggested by the Magistrate to prevent the spread of infection in such a case.

With regard to farmers of charsa mehals, the Magistrate proposes that rules should be issued prohibiting the export of hides from any mehal in which cattle disease might be raging, Export of hides.

PATNA.
R. P. Jenkins, Esq.
Headman; burial.

and holding the headman of each village responsible, under a penalty, that all animals which have died from disease be buried unskinned. He would further require the farmers to enter into bonds to purchase no diseased skins.

In the case of butchers no rules are suggested; but the Magistrate observes that they "are frequently crude curriers, and would certainly sell in the market the skins of their cattle dying by disease."

Scoring skins.

The Magistrate adds that "merely scoring the skins would not render them unmarketable for the native market."

Special legislation not necessary. Hide licenses.

4. The Magistrates of Gya and Tirhoot are of opinion that no special legislation is required. The latter officer would, like the Magistrate of Chumparun, make zemindars responsible for the destruction of the skins of animals dying from disease, and would require both wholesale and retail dealers in skins to take out licenses.

Legislation desirable.

5. The Magistrate of Sarun thinks that "the simplest way would be to pass a short Act, authorizing to segregate all diseased animals to some appointed place, and to bury, or otherwise destroy, all cattle that have died of the plague."

Scoring hides.

6. The Magistrate of Shahabad believes that "the Police might, without legislation, enforce the burial of the bodies of such animals as die from disease in the neighbourhood of all public roads, towns, and villages;" but he fears "it would be found a difficult matter to score the bodies of all such animals after death so as to render them useless for purposes of sale, for chamars and domes would almost invariably get information of a death before the Police, and would strip and at once remove the skin, and they could hardly be punished for so doing without special legislation."

Difficulties.

7. The Magistrate of Patna remarks: "It would be easier to offer an expression of opinion if the simple orders which Government proposed to issue had been circulated. It seems to me that there will be great difficulty in so framing the orders that they shall not become a means or extortion by the subordinate Police; and however desirable it may be to introduce sanitary measures, yet, when these interfere with the universal custom of the villages, and with the pecuniary profits of a class like the chamars, I confess I do not see how the reform can be introduced without special legislation. Like all sanitary reforms, this one will cost some little money, and the rules will have to specify whence it is to be met."

Special legislation desirable.

The following remarks, extracted from a report of Lieutenant-Colonel Emerson, Cantonment Magistrate of Dinapore, will explain the Magistrate's allusion to the cost of the contemplated reform:—

Agency for burial.

"Another difficulty would be to secure the services of persons to remove the dead animals, for unless the chamars, by whom such jobs are at present performed, and who, for their trouble, obtain possession of hides, the horns, and fat, got fully compensated for their loss, they would refuse to touch the carcass, and it would be left to rot on the spot on which it died, which might be in the very centre of the village or hamlet, and thus be the cause of diseases fatal to human beings breaking out."

Hides.

The average value of a "bullock's carcass to a chamar is not less than a rupee, and that of a buffalo is said to be from Rs. 2 to 2-8, which would have to be made good to the fraternity by some means; and then to this would have to be added the cost of digging pits into which to throw the dead beasts. This item, during a cattle plague, would probably prove an unexpectedly heavy one, and the question follows, by whom is it to be borne? The cattle owners could hardly be asked to pay, even though the measures should be intended for their benefit, by preventing the spread of the disease, for they can get their dead animals removed at present for nothing, and they would far rather trust to fate than voluntarily adopt preventive measures."

Expense of burial.

Special legislation necessary.

8. My own opinion is, that it will be very difficult, if not impossible, to enforce generally any orders in regard to the segregation of diseased animals, the destruction of the hides of cattle that have died of disease, and the burial of the bodies, without having recourse to special legislation. No doubt, in places where Municipal Acts are in force, a set of simple rules issued by Government, and supplemented by municipal bye-laws, would materially check traffic in diseased skins. The evil, however, would still remain elsewhere. "No orders for the guidance of the Police" would have any effect unless resistance to the action taken under them by a Police Officer were made a punishable offence. I would suggest, therefore, that the rules contemplated by Government should be embodied in a special Act, and that the breach of them should be made punishable by law. I do not see the force of Colonel Emerson's objections, quoted above. The law as it stands is sufficiently strong to deal with such a case as that supposed by him, in which "a carcass is left to rot in the very centre of a village;" and I can see no hardship in requiring the owners of animals which have died of disease so to dispose of the bodies that they may not cause injury to the cattle of others.

Municipalities.

The suggestions of the Magistrates of Chumparun and Tirhoot regarding the issue of licenses and the responsibility of landholders seem worthy of attention; and in the event of special legislation being adopted, I would recommend the appointment, in this Division, of a qualified officer to superintend the working of the Act, and generally to collect statistics of cattle diseases.

Skilled agent.

BHAUGULPORE DIVISION.

BHAUGULPORE.

From J. W. DALRYMPLE, Esq., *Commissioner of the Bhaugulpore Division, to the Secretary to the Government of Bengal,—(No. 255, dated 9th August 1869).*

J. W. Dalrymple Esq.

In reply to your letter No. 809 of the 21st June last, I have the honor to state, after consulting the district officers in this division, that I am of opinion that the rules proposed to be issued by Government for preventing the spread of cattle disease might be enforced by the Police without special legislation.

Special legislation not necessary.

2. I consider, however, that to ensure the co-operation of the landholders and villagers, and to prevent abuse as much as possible, these measures should be carried out by the Police Officer of the highest rank whose services were available for the duty, and never by any one under the rank of a Head Constable.

RAJSHAHYE DIVISION.

RAJSHAHYE.

From C. E. LANCE, Esq., *Officiating Commissioner of the Rajshahye Division, to the Secretary to the Government of Bengal,—(No. 329, dated 28th July 1869).*

C. E. Lance, Esq.

In reply to your letter No. 809, dated the 21st ultimo, I have the honor first to convey the opinions of the Magistrates in this Division on the subject noted therein, and then my own.

2. *Bogra.*—The Magistrate of Bogra is of opinion that simple orders to the Police would be sufficient; that some expense would be incurred in the burial of the deceased cattle; that in towns this might be charged to municipalities, in the country to the pound fund.

Police orders sufficient.

3. *Rajshahye.*—The Magistrate offered no opinion.

4. *Maldah and Rungpore.*—The Magistrates think the measures contemplated could be enforced by orders to the Police.

5. *Dinagepore.*—The Magistrate thinks that a new law is not wanted, but doubts the ability of the Police to do any real good in the matter without drawing them too much from their legitimate duties.

6. *Pubna.*—Mr. Barton, the late Officiating Magistrate, was of opinion that such interference with the rights of private property as that contemplated in requiring the segregation of cattle could not be carried out effectually without the sanction of the legislature; that great caution would be required in clothing the Police with such new powers as would be conferred on them; that the Act, when passed, should only be in force in those districts to which it was specially extended by Government, and then only to those portions of the district which the Magistrates might indicate.

Special legislation necessary.

7. *Moorshedabad.*—The Magistrate, Mr. Hankey, is of opinion that a legislative enactment would be necessary, and thinks that even then the result would not be satisfactory, as the sympathy of the masses would be against the measure. He adds, that if the Rural Police Bill becomes law, the village punchayuts contemplated therein could give much assistance in the matter.

Punchayuts.

8. For my own part I do not think the complete segregation of diseased cattle could be enforced without a special law, and even then, I think, it would be difficult to carry it out effectually. By "complete," I mean the segregation of diseased cattle from those that are healthy, belonging to the same owner. But I am of opinion that an order might legally be passed under section 62 of the Criminal Procedure Code, forbidding owners of diseased cattle to allow them, or those with which they are herded, to stray or graze beyond their own premises; and that, under the same section, an order might be passed requiring the burial by the owners of the bodies of all cattle that had died of the disease, and that such bodies should be buried with the hides on.

Special law necessary

Segregation.

Diseased cattle.

Burial.

9. The Police should be required to report when cattle disease is raging in any particular locality, and then probably it would be necessary to depute a special small Police force to see that the orders were carried out. The force might be very small; one constable for each village, or, where villages were near together, for two or three villages, with a head constable over the whole special force, would be sufficient.

Report of disease.

Special Police.

COOCH BEHAR DIVISION.

COOCH BEHAR.

From COLONEL J. C. HAUGHTON, C. S. I., *Commissioner of the Cooch Behar Division, to the Junior Secretary to the Government of Bengal,—(No. 2056, dated 15th July 1869).*

Colonel J. C Haughton, C. S. I.

Your letter No. 809 of 21st ultimo states that His Honor the Lieutenant Governor proposes to issue a few simple orders for the guidance of the Police in regard to the segregation of diseased animals, the scoring of the hides of cattle that have died of the disease so as to make them useless for sale, and the burial of the bodies. His Honor is of opinion that such measures might be enforced without special legislation, but on this point an expression of my views is requested.

COOCH BEHAR.

Colonel J. C. Haughton, C. S. I.

Legislation necessary.

2. I have thought it desirable to collect the opinions of district officers. The Deputy Commissioner of Darjeeling is of opinion that simple orders are insufficient, and legislation necessary; or, at any rate, a municipal bye-law as to scoring and burying diseased cattle. He is of opinion that the clauses of the Penal Code for suppression of nuisances, and section 62 of the Criminal Procedure Code, will suffice.

3. The Deputy Commissioner of Julpigoorie, Mr. Beckett, thinks legislation necessary, for reasons to which I shall advert myself further on.

4. Mr. T. Smith, Deputy Commissioner, Goalparah, thinks special legislation unnecessary. He gives no reasons.

5. My own opinion is, that the object in view could not be effected without a special enactment, such as was recently found necessary in England. The only section of the Penal Code which appears to me in the remotest degree applicable to the punishment of persons who might disobey the orders of the Police in this matter is section 290; but though I hold a person who, knowing the consequences, wilfully turned loose a glandered horse might be punished under this section, I do not think it could be twisted to compel a person whose cattle were diseased from using his ordinary pasturage.

6. I do not agree with Major Morton that section 62 of the Criminal Procedure Code is applicable to such a case as that under consideration; nor do I think that Act III of 1864 would authorize a municipality to make a bye-law for the segregation of diseased cattle.

Scoring hides.

7. Mr. Beckett is of opinion, and I agree with him, that unless there be a special law the Police could not insist on scoring hides, which are now valuable, and regarding the infectious nature of which there may reasonably be a difference of opinion. The hide trade has grown to a great extent, and there are some grounds for fearing that wholesale poisonings are occasionally mistaken for epidemics. On this point, I beg to submit a letter from Captain Hedayut Ally (*vide* page 671 of the appendix) to the Cantonment Magistrate of Dinapore, which contains some curious information. If the skins of animals poisoned are, as he says, known by distinctive terms by the trade, according to the mode in which the animals met their death, the crime must be very extensively practised.

8. In conclusion, I would beg to suggest that if a law is passed, it should, in the first instance, be only applied to the more thickly populated districts.

ASSAM.

ASSAM DIVISION.

Lieutenant-Colonel W. Agnew.

From LIEUTENANT-COLONEL W. AGNEW, *Officiating Commissioner of Assam, to the Secretary to the Government of Bengal, Judicial Department,*—(*No.* 10T, *dated* 14*th August* 1869).

I have the honor to acknowledge the receipt of your letter No. 809, dated 21st ultimo, stating that the Lieutenant Governor proposes to issue a few simple orders for the guidance of the Police in regard to the segregation of diseased cattle, the scoring of the hides of animals that have died of the disease so as to make them useless for sale, and the burial of dead bodies; and asking for an expression of my opinion as to whether such measures might be enforced by the Police without any special legislation.

2. In reply, I beg leave in the first place to submit, for the information of His Honor, the opinions of the district officers of this division whom I have consulted on the subject.

Major Comber, Deputy Commissioner of Kamroop, writes:—

Mouzahdars and headmen.

"In Kamroop I would propose that the mouzahdars and heads of villages be required to carry out the arrangements, and that the Police be instructed to see and report that the orders which may be issued on the subject are duly enforced.

Quarantine pound.

"Each village and mouzah should be required to establish a quarantine pound or enclosure at some distance from the grazing ground as soon as the disease appears, into which all cattle stricken with the complaint should be at once driven; and in all cases of death their hides

Disposal of carcass.

should be burnt or otherwise destroyed, the carcasses being buried.

Report by Police.

"I would not employ Police further than requiring them to report when and where the disease is rife; and also to give information as to whether the mouzahdars carry out the orders or not."

Mr. Campbell, Assistant Commissioner of Burpettah, says:—

Present law sufficient.

"I am of opinion that the provisions of sections 268, 269, 270, 271, 277, 290, and 291 of the Penal Code would be ample to provide for the punishment of all breaches of any such rules which may be promulgated by Government. Section 271 of the Penal Code vests Government with authority to frame rules for regulating the intercourse between places where an infectious disease prevails and other places. This would apply, I have no doubt, to the segregation of cattle suffering from disease, while the other sections named by me would be applicable to wilful disobedience in the remaining points to which it is proposed that the rules should refer.

Hides.

"The scoring of hides is unnecessary, as there is no trade in skins carried on in the province, and no attempt is ever made by the people to preserve those of dead cattle. In regard

Burying.

to burying the bodies of cattle which die, I think it will be sufficient if the villagers are restrained

ASSAM.

Lieut.-Col. W. Agnew.

from throwing them into the rivers, and they are made to drag them away to some distance from the villages into the jungles, where the vultures and jackals could get at them. I do not think any scheme for burying them could ever be carried out effectually. To bury buffaloes, and even cows, pits of considerable depth would be required; and even if the people were willing to dig them, it would be impossible to do so in most parts of Assam during the rainy months of the year without the aid of pumps, as water is then generally reached within three or four feet from the surface. In the cold weather months this difficulty would not exist, but I doubt if it would be found practicable to get people to bury the bodies at a sufficient depth, and the not unlikely consequence of an ineffectual attempt to carry out the measure would be to surround each village with clusters of pest holes, the surface earth of which would be continually removed by jackals and dogs, while the bodies inside would be sufficiently inaccessible to prevent these animals or birds of prey from consuming them entirely."

Difficulties.

Major Lamb, Deputy Commissioner of Durrung, observes that he sees no objection whatever to the issue of orders by Government to the Police for the purpose alluded to, adding that he supposes the rules would be framed so as to render persons infringing them liable to punishment under Chapter XIV of the Penal Code.

Segregation.

Burial.

Scoring hides.

Mr. J. J. S. Driberg, Extra Assistant Commissioner of Mungledye, thinks there would be no difficulty in causing villagers to keep diseased cattle separate from the healthy ones, and he has no doubt that such a measure, if thoroughly enforced, would ultimately prove of great benefit. He is also of opinion that the burial of the bodies of cattle that have died from disease might be insisted on; and he does not consider any special legislation necessary for giving effect to the above measures. He adds, he does not consider there is any occasion to make it compulsory on the people to score hides, for there is no sale for them in Durrung, and scarcely any in any other part of the province. With regard to the agency to be employed in seeing the instructions that may be issued carried out, he thinks it would be preferable to give effect to them through the mouzahdars, and only on special occasions to employ the Police.

Special legislation unnecessary.

Burial.

Lieutenant T. B. Michell, Officiating Deputy Commissioner of Nowgong, says he is of opinion that the proposed measure might be enforced by the Police without any special legislation on the subject, and that he considers it already their duty to see to the burial of dead cattle, as it certainly amounts to a nuisance to leave carcasses lying about. He points out that in the recent very severe outbreak of cholera in the Nowgong District, the disease was greatly aggravated by the fact of the water in the rivers being unfit for use in consequence of the numbers of dead cattle which were thrown into them, and he does not think that any objection could be made to the Police interfering in a matter which in its effects is so closely connected with human life in this country as cattle murrain.

Captain A. E. Campbell, Deputy Commissioner of Seebsaugor, remarks as follows :—

Special legislation necessary.

Burial difficult.

Hides.

"My opinion is, that special legislation is necessary. There has been a very severe outbreak of cattle disease in the western part of this district. The owners of the animals never attempt to separate animals diseased from those that are not, and the Police are quite unable, I think, to induce the ryots to do so without the aid of some special law. The burial of the dead bodies is another great difficulty, but which would be lessened if the segregation of the diseased animals was enforced. Large herds of buffaloes are kept on pathars and swamps; they are attacked with disease in those places, and die on the same spot in hundreds. I have lately heard of several hundred having died in the Kalianee Pathar, near Kukila Mukh; in such cases it is impossible to bury the dead. Had those first infected been separated from the herd, it would, in all probability, have prevented the spread of the disease to such an extent. The scoring of the hides of cattle that have died of the disease is not necessary in this province. The skins are not sold as in Bengal or the North-Western Provinces."

Lieutenant Blathwayt, Assistant Commissioner of Golaghat, says :—

Prompt and stringent measures necessary.

Segregation and burial.

Power required to enforce.

"When such a cattle plague as is now devastating some parts of Assam first breaks out, I believe that it is only by the most stringent measures that its spread can be checked; and that unless the Magistrate's hands are strengthened so as to give him in this one case the power of inflicting immediate and severe punishment on all offenders, I fear but little good can be done.

"When the disease first appeared in this sub-division, I issued orders for the segregation of diseased animals and the burial of the dead ones. The last order was tardily obeyed, but not the first; and I longed for some such power as that conferred by section 4, Act I of the present year, which would have enabled me to deal summarily with all who allowed their sick cattle to go about on the public roads; and this was, I believe, what nearly every Assamese, high or low, who had any sick cattle, and a public road near him, used to allow. They seemed to have a prejudice against separating them.

"The only course I could pursue was first to issue an order under section 62 of the Criminal Procedure Code, and then summon those who disobeyed it under section 188 of the Penal Code. Of course, all would plead ignorance of the order, and it being quite possible that such person might have been ignorant, he would be warned and discharged; and before I could again catch the same person offending, all the mischief was done; for the above reasons, I think that some special legislation on the subject is required."

ASSAM.

From Luckimpore no answer has as yet been received.

Lieut.-Col. W. Agnew.

Police insufficient.

Mr. J. F. Campbell, Extra Assistant Commissioner, North Luckimpore, is of opinion that the Police force, as at present constituted, cannot be relied on for the thorough carrying out of the measures mentioned. He says :—

"The Police are now employed in causing the burial of dead bodies, but the detachment here is so small that, beyond a range of two or three miles, their action in the matter is necessarily uncertain, and even within that range their efforts are not attended with the success that I would wish. The present mortality is certainly exceptional, but I need hardly say it is scarcely worth while making rules which will break down entirely on the first strain.

Special legislation necessary.

"Taking it for granted that the Police could carry out any such rules when made, as far as their own efforts are concerned, it seems to me that it would be better to legislate specially in the matter. At present the burial of dead bodies, &c., is enforced by the influence of Police authority on the villagers, so far as it is enforced. But this influence may break down, or it may lead to abuse, neither of which results is desirable."

Major R. Stewart, Deputy Commissioner of the Khasi and Jynteah Hills, thinks it would be difficult to enforce such a measure as that contemplated through the agency of the Police in such a scattered hill district as that in his charge.

Mr. J. B. Shadwell, Extra Assistant Commissioner of Jowai, holds the same opinion, but would conduct operations through the agency of the Dullois.

Lieutenant J. Butler, Officiating Deputy Commissioner of the Naga Hills, says :—

"In my opinion, the very necessary sanitary measures referred to in the Government letter might certainly be enforced without any special legislation.

"As regards the agency to be employed in carrying out the measures, I would, however, prefer to make it part of the duty of our fiscal, rather than of our police officers."

In Assam no rules are wanted but for the separation of infected from healthy cattle and for the disposal of the carcasses of those that die, for there is no trade in hides, and it is unnecessary, therefore, to take precautions against the sale of those of diseased animals. The

Agency.

rules that may be issued should, in Assam, be enforced, in my opinion, through the agency of our fiscal officers, rather than by direct Police intervention, but I doubt if such rules could be

Special legislation necessary.

enforced without special legislation. It is very clear that every owner of cattle, in a district where disease breaks out, could not, by any possibility, be served with a notice, under section 62

Present law insufficient.

of the Code of Criminal Procedure, to take certain order with his cattle, or as regards the disposal of those that die; and I feel sure that courts of law would not recognize a general notice under that section, which seems to me to limit its application to those persons upon whom a written notice has been actually served, and so section 188 of the Penal Code would be inoperative; while as regards Chapter XIV of the Code, I greatly doubt if it provides a punishment for a person who should neglect to separate his cattle in the manner contemplated, or who refused to score the hides of those that died. A man might, I think, be punished under its provisions for neglecting to bury his dead cattle, but for no other neglect respecting

Burial impossible in severe murrains.

them. In such a murrain as we have been just visited with, the burial of the bodies is a simple impossibility; and the attempt we have made to enforce a rule to the effect in question has, in some parts of the country, led to the results described by Mr. A. C. Campbell, whose suggestion for the disposal of carcasses, in so far as Assam is concerned, is the best, in my opinion, that can be offered. It is not applicable, of course, to a thickly populated and well cultivated country, but it is a practicable and sensible proposal for this place. The removal of the bodies to a certain distance from human habitations and from highways, or else the complete burial of them, when that mode of disposal is preferred by the people themselves, should

Throwing carcasses into water.

be insisted on under penalty; while an equally stringent rule is required against throwing carcasses into stagnant water, or into small rivers. The terrible mortality this year in Nowgong from cholera may, undoubtedly, be ascribed in a large measure to the water of the Kallong having been poisoned by thousands of dead cattle having been flung into it; and the law, if it does not already do so, should arm district officers with power to prevent such a state of things.

Hon'ble A. Eden.

From the HON'BLE A. EDEN, *Secretary to the Government of Bengal, Judicial Department, to the Secretary to the Government of India, Home Department,*—(*No.* 2119, *dated 9th October* 1869).

In my letter No. 808, dated 21st June last, a scheme was laid before the Government of India having for its object the creation of a trained body of native farriers whom the Government might from time to time employ in treating and checking the cattle disease which has now so long been prevalent in Bengal. It was further intimated that a reference had been made to the Commissioners of Divisions with a view to elicit their opinions on the feasibility of giving effect without legislation to a few simple rules for the segregation of diseased cattle, the destruction of contaminated hides, and the disposal of affected carcasses. The result of the reference has been to lead the Lieutenant Governor to a decided conclusion

Hon'ble A. Eden.

that, without special legislation, no measures adequate to the gravity of the occasion can be carried into effect. If legislation has been found to be necessary in England, where enlightened self-interest may be fairly supposed to have considerable influence, it must be the more essential in India, where the natural apathy of the people is rendered fatally disastrous by their ignorance or disregard of the most ordinary sanitary laws, and their utter recklessness as to how individual action may affect the general mass. This conclusion would seem already to have forced itself upon at least one Government in India, and the Madras Act II of 1866 gives the force of law to those regulations which the local Government deemed most suited to the circumstances of that presidency. That a similar measure is called for in Bengal may be shown by referring to the fearful ravages which cattle disease, under one form or other, has been making during the present year and last.

Special legislation necessary.

Reasons.

Mortality—Diamond Harbour.

2. In the 24-Pergunnahs the number of deaths in the Diamond Harbour Sub-division alone was, at the time of Mr. Farrell's first inspection, 800 per week. The total number of cases actually attended to by Mr. Farrell and his assistants between August 1868 and January 1869 was 6,735, while the total number of deaths, as estimated by the Magistrate's native subordinates, was over 26,000. These last figures may be, and no doubt are, exaggerated, but they convey an idea of the extent to which the ravages of the epidemic have impressed the native mind. In February and April fresh outbreaks took place in various parts of the same district, and though no accurate statistics are procurable, there is this one fact reported, that 1,000 head of cattle died within a circuit of ten miles on the occasion of the latest outbreak.

Palamow.

Shahabad.

Mymensing.

3. In the Palamow Sub-division of Chota Nagpore the disease appeared in the form of small-pox, and took an epidemic form early in February, carrying off up to the middle of June from 10 to 15,000 head of cattle at the lowest estimates. In the Sonthal Pergunnahs it broke out at Nullah about the middle of March, but the peculiar system of administration there in force enabled the local officers to enforce segregation and insist on sanitary precautions, and the disease died out in the course of April, after causing a loss of only 714 head. In the district of Shahabad the murrain showed itself in March and April, and 563 deaths were reported from two of the pergunnahs lying on the south of the district before the beginning of May. This was said to be a yearly occurrence in those parts. In Mymensing 285 head of cattle died from July up to the 9th of August in seven small villages within the jurisdiction of one Police Station. Traces of the disease were found also in Balasore.

Assam.

4. But it is in Assam that the ravages of the disease have this year been most fatal. The first report of its prevalence came from the district of Luckimpore about the middle of April. So great at that time had been the mortality that the local officers anticipated a deficiency in the amount of the summer crop. Early in May the attention of the Deputy Commissioner of Seebsaugor was attracted by the numbers of carcasses lying about the roads, when it was found that the plague had already carried off many hundreds. From the date on which the disease first appeared in this district up to 31st August 1869, 69,967 cattle were reported to have died; the disease has since sensibly abated. On the 18th June the Commissioner reported that it had appeared in Kamroop during May, but not in a violent form. The total number carried off in this district was afterwards said to amount to 4,580 head up to the 15th June. In Durrung the mouzadars reported that between February and May 26,741 cattle had died. In Nowgong the pest also had broken out; and in the fortnight ending 31st May 7,320 deaths were reported. In June, however, it suddenly abated, and only 1,332 deaths were returned for the first fortnight of that month. Since that time the epidemic has chiefly confined its ravages to the neighbourhood of Dibrooghur.

5. The returns of mortality in all the above instances, being based on the reports of the mouzadars, are not entirely trustworthy, but no doubt can remain of the extreme virulence and far reaching progress which have characterised the cattle epidemic of 1869.

Efforts to meet the difficulty.

6. All that Government could do in the absence of legislation has been done. Mr. Farrell has been at work in the 24-Pergunnahs, and with the small staff at his disposal is believed to have done much good. He has now been despatched to Assam. The local officers have been repeatedly instructed to insist so far as they can upon the segregation of diseased cattle, the destruction of their hides, and the proper disposal of the carcasses. Simple instructions for the treatment of the disease drawn up by Mr. Farrell have been widely circulated in the vernacular. Dr. Macleod's valuable report has also been frequently brought to notice. Special instruction suited to each case has been sought for from Mr. Farrell from time to time. But if the evil is to be adequately met, special powers and adequate funds must be placed in the hands of Government.

Pound Fund.

7. The Lieutenant Governor observes that, under the Madras Act, any expenditure not recovered from the owners of the cattle is met from the Pound Fund under Act III of 1857. He thinks that Government would be fully justified in spending the surplus income of that fund in Bengal in setting on foot an adequate machinery for dealing with the disease, which, if unchecked, will fast denude the country of its agricultural live-stock, and have a most detrimental effect upon the condition of the people generally. The Madras Government has been asked to favor the Lieutenant Governor with an account of the mode in which the local Act in that Presidency has hitherto worked, and especially as regards the provision of a class of

Hon'ble A. Eden.

pound-keepers sufficiently skilled to deal with the disease. The Lieutenant Governor will now call upon Commissioners to report how far the Madras Act is applicable to Bengal. A communication has also been received from the Agricultural and Horticultural Society (a copy of which is forwarded herewith) urging the necessity of legislation, and submitting a draft Act calculated, in their opinion, to meet the objects in view. This will also be forwarded to Commissioners for consideration and early report. Meantime I am to ask for an expression of opinion on the part of the Government of India in regard to the necessity for legislation and the propriety of providing funds in the manner above indicated. A Bill to give effect to such measures might be introduced in the Council of the Lieutenant Governor for making Laws and Regulations.

Skilled agents.

8. I am at the same time to draw the attention of the Governor General in Council to the scheme propounded in my letter No. 808 of the 21st June, already referred to. No success can attend preventive measures unless a class competent to detect and deal with cases of disease be created, and the Lieutenant Governor can see no more economical way of securing this than by some such plan as that already submitted to the Government of India. The men roughly trained in the manner proposed would be available for distribution to the districts, and might either act as pound-keepers or might teach the pound-keepers how to act in the event of cattle disease breaking out. Mr. Farrell has already had application made to him to give instruction in the matter to two young zemindars, and there is reason to hope that many would avail themselves of the opportunity and send their servants to receive instruction.

9. I am to request that, with the permission of His Excellency the Governor General in Council, steps may be taken to procure from the Secretary of State for India, for the use of this Government, on as early a date as practicable, all Acts, Orders of Council, and Legislative Reports on the cattle disease in England.

A. H. Blechynden, Esq.

From A. H. BLECHYNDEN, Esq., *Secretary to the Agricultural and Horticultural Society, to the Secretary to the Government of Bengal, Judicial and Political Departments,*—(*dated* 20*th September* 1869).

I am directed to acknowledge the receipt of your letter No. 1427, dated 4th ultimo, and to reply thereto.

2. The Council of this Society learnt with satisfaction that the subject of special legislation in regard to the cattle disease is engaging the attention of the Government.

3. The specific remedies which appear to be called for have already been so ably brought to notice both by Dr. Palmer and Dr. Macleod of Jessore, and have been so carefully noted in detail, particularly by the latter authority, that the Society have but little to say on the subject.

4. The most important preventives however appear to be—

Segregation.

1*st*.—The segregation of all diseased cattle.

Removal of healthy cattle.

2*nd*.—The removal, if possible, of all healthy cattle to a locality at some distance from the spot at which the disease first manifests itself.

Cremation or burial.

3*rd*.—The cremation, if practicable, or, in its absence, the deep burial of the entire carcass, including the hide.

Prohibition of skinning.

4*th*.—The prohibition of skinning all carcasses save those of animals slaughtered for food.

Prohibition of hide trade.

5*th*.—The prohibition of all traffic in hides in the affected districts.

Proclamation of infected tracts.

6*th*.—The proclamation of all infected districts and the stoppage of all cattle traffic to and from these districts; such proclamation to be made after report from competent local authority.

Legislation necessary.

5. The Council are aware of the difficulty of enforcing the strict observance of the above recommendations; but looking to the fact that nothing short of legislation and instant burial of diseased carcasses was of any avail in England (where the people are so much more alive to their own interests in such matters in times of plague and murrain), there can be but little doubt, it is submitted, that nothing short of legislation on the subject will enforce, under more unfavorable circumstances, the observance in this country of the precautions suggested.

Stringent measures called for.

6. It appears to the Council that all the circumstances connected with the present epizootic require very stringent measures to check the disease, which, according to present information, has shown itself over so large a tract of country as from the south-west frontier to the districts of Assam.

Treatment.

7. The Magistracy may do something by making known the remedies suggested by Dr. Macleod, and put in practice by Mr. Veterinary Surgeon Hiram Farrell, and by impressing on

Early notice.

the Police the necessity of immediately reporting all cases of infection in their several beats, as well as endeavouring to effect the segregation of diseased cattle; but it is impossible to do much without the aid of the landholders, as well as the people themselves.

8. The Magistrate of Jessore, in his letter No. 989 of the 10th July 1869, gives a lamentable picture of the apathy of the cattle owners in his district in regard to the disease which is devastating their herds. The self-interest of owners of cattle in England was at one time as much the cause of the spread of the disease as the apathy of the cattle owners is here, for before infected districts were proclaimed, many cattle owners, who found that the disease had shown itself in the herds, quietly slaughtered the affected, kept their own counsel, and sold off the remainder on the principle of the first loss being the least. It was not till infected districts had been proclaimed, a cordon put round them, and all communication between them and other districts had been strictly prohibited, that this cause of the spread of disease was put down. It is not too much to say that similar causes for the spread of the disease exist in this country. A.H.Blechynden,Esq. Apathy of owners. Parallel in England.

9. There are periodical markets and small fairs, independently of the large annual cattle fairs which are held at intervals varying from a week to a month or two: such markets and fairs are held in Ooloobaria and Dum-Dum; at the latter place we believe that the market is a weekly one. It is within the knowledge of the Council that cattle constantly pass from the one place to the other, and as both places are infected districts, there is not only no chance of stopping the disease in either place, but rather there is the certainty, by constant intercommunication, of perpetuating it. Other places of course communicate with these two, and similar intercommunication takes place between other districts over the whole country. These two markets are quoted merely because the facts in connection with them are within the knowledge of the Council. They present it as submitting a good ground for action being taken in the line indicated by the 6th suggestion, as given before under paragraph 4. Markets.

10. Whilst strongly urging the necessity of resort to special legislation, the Council would suggest that it would be desirable to make a strong appeal to the landholders throughout the country, calling on them to aid in the eradication of a disease, the effects of which must so strongly affect their own interests. Such an appeal, if properly made, will, the Council think, bear some fruit, if not by inducing them to perform a public duty, at any rate by making clear to them the great personal interests they have at stake. Appeal to landholders.

11. It is true that many landholders are absentees, but all have what they consider competent local managers, and an order from the landholder to his naib would go a great way towards procuring assistance.

12. The headman in each village might be made responsible to the district officer for the immediate report of all cases of the outbreak of the disease. Headman.

The village chowkeydar is usually aware of everything that goes on in his beat, and he should be likewise made responsible to the headman for the report of all cases of the disease showing itself in his beat. Chowkeydar.

13. Whilst the headman is thus vested with a responsibility, it is but fair that he should be clothed with some authority in return; and it is suggested that he should have power to insist on the segregation of diseased cattle, the cremation of their corpses, the prevention of skinning hides, and the stoppage of the traffic in hides to or from his village. He should have power to call in the aid of the village chowkeydar, and if both are unequal to the task, to summon the regular Police to their assistance, a written requisition to this effect being always preferred to the Inspector. Powers of headman.

14. By a recent order in Council in England, the owner of infected cattle is bound to give notice to the Police of any outbreak of disease among his own herd, and himself to take immediate measures for the segregation of the infected animals. Some such order as this should be adopted, with a penalty attaching to owners of cattle neglecting to comply with the terms of the order. Notice. Penalty.

15. Some such plan as this, in which the people themselves are interested in the cause, would go far to aid legislation. The actual mode of working out this suggestion the Council would leave, as regards details, to the experience of district officers.

16. There is one more remedy which the Council would mention, and that is, the recourse to what is called in England stamping out the disease, in other words, the immediate destruction of all infected animals. This is a violent remedy, but it was found absolutely necessary in England, and it may be found necessary here. It was found necessary in America, for the disease spread with alarming rapidity from Texas to New York, a far greater track to traverse than from the Russian Steppes to Great Britain. In the State of Illinois wholesale slaughter of infected cattle and strict prohibition of the importation of foreign cattle alone stopped the plague. The same was the case in Kansas, Missouri, Ohio, New Jersey, Pensylvania, and New York. Stamping out.

17. Seeing the rapidity with which the cattle disease spreads itself, this remedy appears to the Council as one which ought not to be neglected whenever the outbreak of the disease is of a virulent type in any particular district.

18. With reference to the subject of special legislation, I am directed to submit a rough draft of the form which, in the opinion of the Council, the legislation should take. It is an

A. H. Blechynden, Esq.

adaptation with trifling alterations of 11 & 12 Vict., C. 105, sections 1 to 3, and of 11 & 12 Vict., C. 107, sections 1 to 4, 7, 8, 10, 11, 14, 15, and 19.

Skilled agency.

19. The Council would also wish to urge the necessity of imparting instructions to natives in veterinary knowledge, so as to enable them to battle with this disease. The recommendations of Mr. Veterinary Surgeon Farrell to the Magistrate of the 24-Pergunnahs in his letter of 20th March sufficiently indicate the course such instruction should take. Even if Mr. Farrell's suggestions be carried out on a limited scale, good cannot but result.

DRAFT ACT.

Prohibit importation.

I. Whereas it is expedient, in order to prevent the introduction of contagious or infectious disorders among cattle, sheep, or other animals, that power should be given to the Local Government to take such measures as may appear necessary for preventing or regulating the importation of such animals from districts in which such infectious or contagious disorders prevail, it is hereby enacted that it shall be lawful for the Lieutenant Governor of Bengal from time to time, by notification in the official Gazette, to prohibit the importation of cattle into particular districts or places that may be named in such notification.

Quarantine and destruction of diseased cattle, hay, &c.

II. And be it further enacted that it shall be lawful for the Lieutenant Governor of Bengal from time to time, by notification in the official Gazette, to make such regulations for subjecting cattle, sheep, or other animals to quarantine, or for causing the same to be destroyed, or for destroying any hay, fodder, straw, or other article by which it may appear that contagion may be propagated, and generally to make such regulation as may be necessary to prevent the introduction or spread of any contagious or infectious disorder.

III. And be it enacted that if any cattle, sheep, or other animals shall be imported, or attempted to be imported, or introduced from an infected district, such cattle, sheep, or other animals shall be dealt with in accordance to the rules published under the foregoing section for their disposal by treatment.

Markets.

IV. Further, whereas in contagious or infectious disorders, known and described as puscheema and gotee, now prevailing among cattle in the districts of Bengal, and it is necessary to check such disorders and prevent them from spreading, it is also hereby enacted that in case any cattle so infected with or laboring under these disorders, or any disorders of the like nature, be exposed or offered for sale, or be brought or attempted to be brought for the purpose of being so exposed or offered for sale in any market, fair, or other open and public place where other animals are commonly exposed for sale, it shall be lawful for the Inspector or any other officer of Police, headman, or chowkeydar of the village or place in which such market is held, or for any other person authorized by the district officer, or any Justice of the Peace having jurisdiction in the place, or for any person authorized or appointed by the Lieutenant Governor of Bengal, to seize the same and to report the seizure to the district officer or the District Superintendent of Police, or to any person having jurisdiction in the place. And it shall be lawful for such district officer or District Superintendent of Police, or person having jurisdiction in the place, either to restore the same, or cause the same, together with any pens, fencing, troughs, litter, straw, or other articles which he may judge likely to be infected thereby, to be forthwith destroyed or otherwise disposed of, or as may be directed in manner hereinafter provided.

Penalty.

V. Any person bringing or attempting to bring any cattle, sheep, or other animals into any such market or fair as aforesaid, knowing such cattle, sheep, or other animals to be infected or laboring under either of the disorders aforesaid, shall upon conviction thereof forfeit and pay for each and every such offence a sum not exceeding rupees (100) one hundred.

Depasturing.

VI. And be it enacted that if any person turn out, keep, or depasture any cattle, sheep, or other animals laboring under the said disorders upon any forest, wood, marsh, or waste land, open field or roadside, or other undivided or unenclosed land, such person shall, on conviction, forfeit and pay a sum not exceeding rupees (100) one hundred.

Skinning.

VII. And for the more effectually preventing the spreading of contagious diseases, be it enacted that it shall be lawful for the Lieutenant Governor of Bengal from time to time to make and issue such orders as to him may seem necessary for the purpose of prohibiting and regulating the removal to or from such places or districts as may be designated in such orders of cattle, sheep, or other animals, or of meat, skins, hides, horns, hoofs, or other parts of any animals; of hay, straw, fodder, or other articles likely to propagate infection, and also for the

Disinfection.

purpose of purifying any yard, stable, out-house or other places, or any wagons, carts, carriages, or other vehicles, and also for the purpose of directing how animals that are dying in a diseased state, or any animals, parts of animals, or other things seized under the provisions of this Act, are to be disposed of, and also for the purpose of causing notices to be given of the appearance of any disorder among cattle, sheep, or other animals, and to make any orders or regulations for the purpose of giving effect to the provisions of this Act, and to vary, alter, and revoke any such orders or regulations, and all persons offending against the same shall, for each or every offence, forfeit and pay any sum not exceeding rupees (100) one hundred.

Obstructing authorities.

VIII. And be it enacted that in case any person wilfully obstruct or impede any person acting under authority of this Act, every person so offending, and all others aiding and abetting or assisting therein, shall and may be seized and detained by such person so acting

under authority of this Act as aforesaid, or any person or persons he may call to his assistance until such offender or offenders can be conveniently taken before some Magistrate or Justice of the Peace having jurisdiction in the district or place wherein such offence shall be committed, and when convicted before such Magistrate or Justice of the Peace as aforesaid, (who is hereby authorized and required upon complaint to him upon oath to take cognizance thereof, and to act summarily in the premises,) shall, in the discretion of such Magistrate or Justice of the Peace, forfeit any sum not exceeding Rs. 50, and in default of payment thereof shall and may be imprisoned for any term not exceeding two calendar months, unless the amount of the penalty shall have been sooner discharged.

Recovery of fines.

IX. And be it enacted that every penalty or forfeiture imposed by this Act may be recovered by summary proceeding before a Magistrate or Justice of the Peace, and upon the exhibition of any information in writing before any Justice of the Peace or Magistrate, such Magistrate or Justice of the Peace shall issue a summons requiring the party complained against to appear before a Magistrate or Justice of the Peace having jurisdiction at a time and place to be named in such summons, and every such summons shall be served on the party offending, either in person, or by leaving the same with some inmate at his last or usual place of abode, and upon the appearance of the party complained against, or in his absence, after proof of service of such summons, it shall be lawful for any Justice of the Peace or Magistrate having jurisdiction to proceed to the hearing of the complaint, and upon proof of the offence, either by the confession of the party complained against, or upon the oath of one creditable witness or more, it shall be lawful for such Magistrate or Justice of the Peace to convict the offender, and upon such conviction to adjudge the offender to pay such penalty as may seem fit, and not greater than the penalty or forfeiture specified in this Act, as well as such costs attending the conviction as to such Magistrate or Justice of the Peace shall seem fit.

Distress.

X. And be it enacted that if forthwith on any such adjudication as aforesaid, the amount of the penalty or forfeiture, and of such costs as aforesaid, be not paid, the amount of such penalty and costs shall be levied by distress, and such Magistrate or Justice of the Peace, or any other Justice of the Peace or Magistrate having jurisdiction as aforesaid, shall issue his warrant of distress accordingly.

XI. And be it enacted that it shall be lawful for any such Magistrate or Justice of the Peace to order any offender so convicted as aforesaid to be detained and kept in safe custody until return can be conveniently made to the warrant of distress, to be issued for levying such penalty or forfeiture or costs, unless the offender give sufficient security by way of recognizance or otherwise to the satisfaction of the Magistrate or Justice of the Peace for his appearance before him on the day appointed for such return, such day being not more than eight days from the time of taking such security, but if before issuing such warrant of distress it appear to the Magistrate or Justice of the Peace, by the admission of the offender or otherwise, that no sufficient distress can be had within the jurisdiction of such Magistrate or Justice of the Peace whereon to levy such penalty, forfeiture, and costs, he may, if he think fit, refrain from issuing such warrant of distress, and in such case, or if such warrant shall have been issued, and upon the return thereof such insufficiency as aforesaid shall be made to appear to such Magistrate or Justice of the Peace, then such Magistrate or Justice of the Peace shall, by warrant, cause such offender to be committed to gaol, there to remain without bail for any term not exceeding two months, unless penalty or forfeiture and costs be sooner paid and satisfied.

Overplus of sale by distress.

XII. And be it enacted that when in this Act any sum of money, whether in the nature of penalty or otherwise, be directed to be levied by distress, such sum of money shall be levied by distress and sale of the goods and chattels of the party liable to pay the same, and the overplus arising from the sale of such goods and chattels, after satisfying such sum of money and the expenses of distress and sale, shall be returned on demand to the party whose goods shall have been distrained.

Limitation.

XIII. And be it enacted that no person shall be liable to the payment of any penalty or forfeiture imposed by virtue of this Act for any offence made cognizable before a Justice of the Peace or Magistrate, unless the complaint respecting such offence shall have been made before such Magistrate or Justice of the Peace within one month next after the commission of such offence.

Power to summon.

XIV. And be it enacted that it shall be lawful for any Magistrate or Justice of the Peace to summon any person to appear before him as a witness on any matter in which such Magistrate or Justice of the Peace shall have jurisdiction under the provisions of this Act, at a time and place mentioned in the summons, and to administer to him an oath to testify the truth in such matter, and if any person so summoned shall without reasonable excuse refuse or neglect to appear at the time and place appointed for the purpose, having been paid or tendered a reasonable sum for his expenses, or if any person appearing shall refuse to be examined on oath, or to give evidence before such Magistrate or Justice of the Peace, every such person shall forfeit a sum not exceeding Rs. 50 for each offence.

Improper seizure.

XV. And be it enacted that in case the Magistrate or Justice of the Peace to whom the seizure of any cattle, sheep, or other animals supposed to be infected as aforesaid, or any meat

A. H. Blechynden, Esq.

supposed to be unfit for human food, may have been reported, shall, upon enquiry, order the same to be restored, and in case it appear to such Magistrate or Justice of the Peace that there was a probable cause of seizure, then and in such case the said Magistrate or Justice of the Peace shall grant a certificate to the party making the seizure, that there was such probable cause, and in such cases the person or persons who made such seizure, being a person or persons acting under the authority of this Act, or of any order made in pursuance thereof, shall not be liable to any action, indictment, or other suit, or prosecution on account of such seizure. And in case any action, indictment, or other suit, or prosecution shall be commenced or brought to trial against any person or persons, being a person or persons acting under such authority as aforesaid, on account of the seizure of any animals, parts of animals, hay, straw, fodder, or other articles seized as forfeited under the provisions of this Act, or of any order or orders made under authority of the same wherein a verdict shall be given against the defendant or defendants, if the Court or Judge before whom such suit or information shall have been tried shall have certified on the said record that there was a probable cause for such seizure, then the plaintiff, besides the thing seized or the value thereof, shall not be entitled to above 1 anna damages nor to any costs of suit, nor shall the defendant or defendants on such prosecution be fined above 4 annas.

MADRAS.

Madras Act—for the prevention of the spread of cattle disease.

ACT PASSED BY THE GOVERNMENT OF FORT ST. GEORGE FOR THE PREVENTION OF THE SPREAD OF CATTLE DISEASE IN THE MADRAS PRESIDENCY.

ACT No. II OF 1866.

PASSED BY THE GOVERNOR OF FORT ST. GEORGE IN COUNCIL.

(Received the assent of the Governor on the 16th March 1866, and of the Governor General on the 17th April 1866).

An Act for the prevention of the spread of disease among Cattle in the Madras Presidency.

Preamble.

Whereas it is expedient to take measures to prevent the spreading of contagious or infectious diseases among animals in the Presidency of Madras, and, with that object, to prescribe by law in what way animals so infected shall be dealt with; it is hereby enacted as follows:—

Act to be extended to such places, and during such periods of time, as the Governor in Council thinks proper.

1. This Act shall be put in force in such districts, or parts of districts, and during such periods of time, as the Governor in Council may, from time to time, direct by notification in the *Fort Saint George Gazette*.

Interpretation.

2. The following words and expressions in this Act shall have the meaning hereby assigned to them, unless there be something in the subject or context repugnant to such construction:—

Magistrate.

The word "Magistrate" shall include all persons exercising all or any of the powers of a Magistrate.

Number.

Words importing the singular number shall include the plural number, and words importing the plural number shall include the singular number.

Gender.

Words importing the masculine gender shall include the feminine.

Animal.

The word "animal" shall mean any camel, buffalo, horse, pony, ass, bull, bullock, cow, heifer, calf, sheep, lamb, goat, kid, or swine.

Where Hospital Pounds shall be established.

3. Whenever this Act shall have been applied, as above provided, to any district, or part of a district, Hospital Pounds shall be established in such places as the Magistrate of the district shall determine, and Keepers shall be appointed to such Pounds by the said Magistrate. The village, or villages, by which every Hospital Pound is to be used shall be determined and notified by the Magistrate.

Owner or person in charge of cattle to give notice when they are attacked by any contagious disease.

4. Whenever, in any district, or part of a district, to which this Act has been extended as above provided, any animal is attacked by any contagious or infectious disease, it shall be the duty of the owner, or of the person in charge thereof, to give immediate notice to the Keeper of the Hospital Pound provided for the village or township in which the animal may at the time be.

Pound-keeper to examine animal.

5. On receiving notice as aforesaid, the Keeper of the Hospital Pound shall, as soon as possible, examine the animal, and shall decide whether it is necessary to place it in the Hospital Pound for treatment.

To direct removal to Hospital Pound, if necessary.

6. If the Keeper of the Hospital Pound shall be of opinion that the animal has any contagious or infectious disease, he shall thereupon require the owner of the animal, or the person in charge thereof, to place it in the Hospital Pound, and, if necessary, shall require the owner, or the person in charge, to take such measures as he may direct for disinfecting the shed or other place in which the said animal may have been kept.

Inspection of places in which any animal, suspected to be laboring under any contagious or infectious disease, may be found.

7. Every Keeper of a Hospital Pound, or person thereto authorized by the Magistrate of the district, shall have power, within the range for which he is appointed, to enter upon and inspect any premises or place in which any animal or animals, which he suspects to be laboring under any contagious or infectious disease, may be found, and to examine and inspect, whenever or wherever he may deem it necessary, any animal or animals which he suspects to be laboring under such disease, and to require the removal of such animal or animals to the Hospital Pound for the range.

Cleansing of premises in which any animal laboring under any contagious or infectious disease has been or may be.

8. Every Keeper of a Hospital Pound, or person thereto authorized by the Magistrate of the district, shall have power, within his range, to cause to be cleansed and disinfected, in any manner which he may think proper, any premises in which any animal, laboring under any contagious or infectious disease, has been or may be, and to cause to be disinfected, and, if necessary, destroyed, any fodder, manure, or refuse matter which he may deem likely to propagate the said disease.

Expenses for food and treatment to be borne by Cattle Pound Fund, unless owner supplies food and medicines.

9. From the time when any animal affected as aforesaid is taken charge of by the Keeper of the Hospital Pound, all expenses incurred on account of feeding and medical treatment for the said animal shall be borne by the Cattle Pound Fund established under Act III of 1857, unless the owner, or person in charge thereof, desires to supply the food and medicines himself: provided always, that such food and medicines shall be such as the Keeper of the Hospital Pound may approve or direct.

Animals destroyed to be buried, and no compensation claimable by owner.

10. The Keeper of the Hospital Pound, or other person thereto authorized by the Magistrate of the district, shall be empowered to destroy any animal either before or after it has been impounded as aforesaid, whenever it shall appear to him to be necessary to prevent the spread of contagion or infection. When any animal shall have been so destroyed, or shall die whilst in charge of the Keeper of the Hospital Pound, it shall be the duty of the said Keeper to have the carcass of the said animal buried at least six feet below the surface of the ground, and any cost incurred in so doing shall be met from the Cattle Pound Fund. No compensation shall be claimable in respect of any loss incurred by reason of any act authorized by this section.

Fees to be charged, and animals to be sold to pay expenses, if not paid.

11. Should an animal impounded as aforesaid recover from the disease under which it may have been laboring, the owner, or person who was in charge thereof, shall pay to the Keeper of the Hospital Pound, to be placed to the credit of the Cattle Pound Fund, the actual cost of the feeding and treatment of such animal. Should he fail to pay the expenses aforesaid, then the said animal shall be sold by auction, and the sum realized by its sale, after deducting the amount of the expenses, shall be paid over to the owner, or the person who was in charge: provided always, that in such cases, as the owner or person who was in charge may elect to supply food and medicine, he shall not be required to pay any charges whatever.

Prohibition against removal, without license, from one place to another of any animal which has been in the same shed or in contact with any animal laboring under any contagious disease.

12. No person having in his possession, or under his custody, any animal which has been in the same shed or stable, or in the same herd or flock, or in contact with any animal laboring under any contagious or infectious disease, shall remove such animal alive from his land or premises without the license of the Keeper of the Hospital Pound for the range, or of some person authorized by the Magistrate of the district to grant such license. Every such license shall be in writing, and shall only permit the removal of such animal to some place where it can be conveniently kept apart from all other animals, until the Hospital Pound-keeper, or other person authorized as aforesaid, is satisfied that there is no reasonable probability of such animal propagating the disease.

Penalty for failing to give notice when animal is attacked by disease.

13. If any person, who may be in charge of any animal at the time of its being attacked by a contagious or infectious disorder, shall fail to give notice to the Hospital Pound-keeper of the village, as required in section 4, the said person shall be liable, on conviction before a Magistrate, to a fine not exceeding five rupees for every instance of such neglect, commutable, if not paid, to simple imprisonment for any period not exceeding ten days.

Penalty for refusing to obey directions of Cattle Pound-keeper, &c.

14. Any person who shall fail to comply with the directions of a Hospital Pound-keeper, or of a person duly authorized by the Magistrate of the district in that behalf, as to the impounding any diseased animal, or to the disinfecting any premises or place where any diseased animal may have been kept, or to the disinfecting or destroying any fodder, manure, and refuse matter which may be likely to propagate the disease, or who may remove, without a license, any animal which has been in the same shed or stable, or in the same herd or flock, or in contact with any animal laboring under any contagious or infectious disease, shall, on conviction before a Magistrate, be liable, for every such offence, to a fine of twenty rupees, commutable, if not paid, to simple imprisonment for any period not exceeding ten days.

Penalty for opposing the seizure and impounding of diseased animals.

15. In any district or part of a district in which this Act is in force, it shall be the duty of all Hospital Pound-keepers, of all Police officers not below the rank of a head constable, and of such other persons as the Magistrate of the district may especially empower, to seize and impound all animals suffering from contagious or infectious disease, and any person who shall forcibly oppose such seizure, or who shall forcibly rescue the animals after such seizure, shall be deemed to have committed an offence punishable under section 186 of the Indian Penal Code.

MADRAS.

Owner may prefer complaint to Magistrate within ten days of the seizure of his animals.

16. Any person, whose animals shall have been seized as being diseased, may prefer a complaint against the seizure, at any time within ten days from the date thereof, to any Magistrate. The complaint may be either verbal, in which case the substance of it shall be taken down in writing by the Magistrate, or written upon plain paper, and shall be preferred by the complainant in person or by an agent personally acquainted with the circumstance. If on examination of the complainant or his agent, the Magistrate shall see reason to believe the complaint to be well founded, he shall summon the party complained against, and shall proceed to make summary inquiry into the case. If the seizure be adjudged illegal, the Magistrate shall award to the complainant such damages as he may deem to be reasonable compensation for any loss or injury sustained from unlawful seizure, together with all expenses incurred by the complainant in procuring the release of the animals; or, if the animals have not been released, the Magistrate, in addition to the award of damages, shall make an order for their release, and shall direct that the expenses leviable under this Act shall be paid by the party who made the seizure. The amount of all damages and expenses so awarded shall be recoverable according to the process prescribed in Act No. V of 1865 (Madras) for the recovery of forfeitures or penalties imposed under the authority of Act XXV of 1859.

Fees and fines to be credited to Cattle Pound Fund.

17. All fines levied under this Act shall be credited to the Cattle Pound Fund established under the provisions of Act III of 1857, which fund shall be available for payment of all expenses incurred under the provisions of this Act: provided that it shall be lawful for the officer inflicting a fine under this Act to direct any portion thereof, not exceeding one-half, to be paid to the informer.

Governor in Council may make and prescribe bye-laws, with penalty for breach.

18. It shall be lawful for the Governor in Council, by notice published in the *Fort Saint George Gazette*, to make and prescribe such bye-laws as may, from time to time, seem necessary for the more effectually preventing the spreading of infectious or contagious diseases among animals, provided that such bye-laws shall not be repugnant to the provisions of this or any other Act. A breach of any such bye-laws shall render the party liable, on conviction before a Magistrate, to a fine not exceeding ten rupees, commutable to simple imprisonment for fifteen days.

BENGAL CIRCULAR.

A. Mackenzie, Esq.

Circular from A. MACKENZIE, Esq., *Officiating Junior Secretary to the Government of Bengal, to all Commissioners,*—(*No.* 2122, *dated 9th October* 1869).

I am directed to forward herewith a copy of Act No. II of 1866, passed by the Governor of Fort St. George in Council for the prevention of the spread of disease among cattle in the Madras Presidency, as also a copy of a letter from the Secretary to the Agricultural and Horticultural Society, enclosing a draft of an Act for the same object, based on the English Regulations on the subject, and I am to request that you will favor the Lieutenant Governor at a very early date with your opinion as to the form which any similar legislative enactment should take for Bengal, the machinery by which it could best be worked, and the source from which funds could most easily be provided. You should, through the Magistrates, consult any planters and landholders in their district who are likely to have any experience or knowledge on the subject.

2. Copies of a letter to the Government of India on the subject are enclosed for your information.

3. I am also to request that you will forward a statement showing the receipts, disbursements, and balances of the Pound Fund, under Act III of 1857, for each district in your division during the year 1868-69.

PRESIDENCY DIVISION.

PRESIDENCY.

H. A. Cockerell, Esq.

From HORACE A. COCKERELL, Esq., *Officiating Commissioner of the Presidency Division, to the Secretary to the Government of Bengal, Judicial Department,*—(*No.* 93, *dated 22nd April* 1870).

I have the honor to reply to your letter No. 2122 of the 9th October, calling for a report as to the form which any legislative enactment should take for the prevention of the spread of cattle disease in Bengal.

2. The reply from one district of the division only reached me on the 11th ultimo, which must account for the delay in answering your letter.

Legislation necessary.

3. As to the necessity of legislation there can be no doubt. The apathy and want of enlightenment of the agricultural classes, and of most zemindars on any question of the kind, render it hopeless to rely on anything in the shape of voluntary effort or united co-operation.

Practicability.

4. The points to which legislation should be directed are given in Mr. Blechynden's letter, forming one of the enclosures of your communication; but it is a matter for consideration whether, looking to the peculiar features of the country, and the ideas of the people in connection with the cattle of this description, it is within the bounds of possibility practically to ensure the enforcement of all these regulations in a manner that will be effective, yet within a moderate limit as regards cost.

PRESIDENCY.
H. A. Cockerell, Esq.

5. I proceed to consider the measures suggested in Mr. Blechynden's letter in the order in which they are mentioned. The two first preventive measures are the segregation of diseased cattle and the removal of all healthy cattle to a distance. To the adoption of the first measure I see no insuperable difficulties; the Madras plan might be adopted, and, in the event of any outbreak of the epidemic, Hospital Pounds established in certain localities; but the removal of healthy cattle would be a very difficult matter. The number of them throughout the villages in Lower Bengal is so enormous, and the difficulties of getting forage and shelter away from their own villages and grazing grounds would be so great, as to render it practically impossible to insist on their being driven away to uninfected villages. Moreover, if the disease broke out simultaneously in many places, the inspection of all cattle by an agency competent to discover the earliest symptoms of the pest would be impossible, and in all probability some of the so-called healthy cattle would carry with them the germs of the disease and spread the infection in a fresh locality.

Segregation.

Removal of healthy cattle impracticable and unadvisable.

6. The cremation or deep burial of the carcasses, and the prohibition against skinning any carcasses save those of animals slaughtered for food, might, without great difficulty, be enforced, though Mr. Monro, I find, thinks strong objections would be raised by natives to this proposal. The stoppage of all traffic in hides is also a matter of necessity, more especially if the suspicion expressed in one of Dr. Farrell's reports is well founded, that the chamars and dealers in skin take the opportunity of the prevalence of cattle disease to poison cattle wholesale with a view of obtaining their skins.

Cremation or burial.

Hide traffic.

7. The enforcement of the proposal to proclaim all infected districts, and to put a stop to all cattle traffic to and from infected districts, is in this country simply impossible. Such a measure may be easy enough in England, where the country is enclosed and the traffic must always go by prescribed routes, but in Lower Bengal, where every village has innumerable outlets, and is surrounded by plains open in all directions, and accessible at every point, any such measure would be quite impracticable.

Proclamation and stoppage of movements of cattle impracticable.

8. To attempt to enforce any such regulation through Police agency would render the employment of an immense extra force necessary, and would open a door to innuemrable malpractices.

9. In the 17th paragraph of Mr. Blechynden's letter it is suggested that provision should be made in extreme cases for wholesale stamping out the disease. The religious and caste feelings of all Hindoos would, I am of opinion, preclude the adoption of any remedy of the kind in this country; besides, however practicable such a plan may be in England, where there are chiefly small herds in separate farms, it could hardly be carried out amongst the large herds that goallas keep in Lower Bengal.

Stamping out impracticable.

10. The legislative enactment that I would propose should be one embracing the main provisions of the Madras Act, but in addition containing clauses rendering compulsory the burial or cremation of the carcasses, and giving Government the power to render penal the export of hides from infected localities.

Madras Act approved

11. It is when we come to consider the machinery necessary to work the Act effectively that the greatest difficulties present themselves. Mr. Monro considers that segregation, until we have competent cattle doctors to cure the sick, would be useless; but in this I am not prepared to concur. If any widespread outbreak of the rinderpest occurs in any locality, I am afraid the best Salootrees in India will do but little, but in the majority of cases we shall have to deal with partial outbreaks, and in such instances we may, by prompt segregation, prevent the spread of contagion, and the advantages of this can hardly be over-estimated. The absence at present of any competent agency renders it the more necessary that the plan sketched out in your letter No. 808, dated 21st June, to the Government of India, should be adopted, and that we should, as far as possible, endeavour to train up a body of men with some knowledge of the measures to be taken in the treatment of cattle murrains, and which would, at any rate, form the nucleus of a veterinary establishment. It must, however, be many years to come before the number of skilled subordinates could be anything like sufficient in case of any general outbreak of the epidemic. We must, therefore, in making any suggestion for the working of the proposed Act, bear in mind that the agents to be employed will be entirely unskilled. When Hospital Pounds are established, each pound must have one or more keepers, according to the extent of its jurisdiction. These Pound-keepers must be specially selected men; Salootrees, when they can be obtained; if they cannot be procured, then Mahomedans, or very low caste Hindoos. Our present Pound-keepers are nearly all Brahmins and Kayasts, who would be quite unfit for the charge of Hospital Pounds.

Agency.

Necessity for skilled agents.

Pound-keepers.

12. In cases of partial outbreaks, the establishment of pounds with a certain number of keepers and assistants will be probably all that is required; but when a considerable tract of country is affected, increased agency will be required in such cases. Every infected tract will have to be divided into circles, over each of which there must be an Inspector and a certain number of assistants; for the purposes of the Act, these men should all be invested with the powers of police officers. In some localities zemindars, European or native, willing to assist Government, might be invested with the powers of Magistrates, and have also authority to supervise the action of the subordinates in the department.

Pounds.

PRESIDENCY.
H. A. Cockerell, Esq.

13. I annex the required statement showing the particulars regarding the Pound Fund in each district.

Expense.

14. Without actual experience, it is impossible to estimate with any approach to accuracy what the expenses of working the Act in any locality will be; but there can be little doubt that, in case of any widespread and continued outbreak of the epidemic, the amount at credit of any District Pound Fund will be quite inadequate, and that additional funds will be requisite. To provide these, I would suggest that the Act should give the Government the power to

Village rate.

impose a rate on all villages situated within the infected tract, and a certain radius round it. In all places where Act III of 1864, Act VI of 1868, or the new Chowkeedary Act, now under consideration in Council, may be in force, the rate might be made on the basis of the village assessment books at the rate of so many annas in the rupee, with reference to the amount required. The amount thus raised should be supplemented by an extra fee levied in the shape of head money on all cattle; this is, I think, but fair. Although it would not be equitable to allow the entire expense to fall on the owners of cattle, still they are the persons most interested in the matter, and should pay higher than the rest of the community for these special measures to preserve their property. The superior landlord, zemindar, putneedar, and izardar should each be made to contribute a percentage on the rent they respectively derived from the village. The amount thus raised might be further supplemented by a grant from Government.

Punchayets.

15. The above is a general outline of the manner in which it appears to me funds might be raised for the purposes of the Act. The data on which to fix the amount to be levied on each individual would be ready at hand, no enquiry would be necessary, and the amount might be levied through the agency of the village punchayets, to be appointed under the new Chowkeedary Act. I have myself no very strong reliance on the agency of village punchayets for matters of this kind, still, if found able to collect the assessment under the new Chowkeedary law, they may be deemed competent to collect the rates under the proposed enactment.

16. The Magistrates of this Division have, as directed, consulted both planters and landholders in their districts.

Unanimity for legislation.

17. As regards the necessity for legislation there is very general unanimity of opinion, but there is, as might be expected, considerable diversity in the suggestions made as to the extent of interference which should be authorized by law.

Statement showing the Receipts, Disbursements, and Balance of the Pound Fund in the Presidency Division for 1868-69.

Names of Districts.	Receipts.	Disbursements.	Balance.
	Rs. As. P.	Rs. As. P.	Rs. As. P.
Jessore	*17,772 6 0	4,720 6 0	13,052 0 0
Nuddea	10.860 11 4	5,896 4 7	4,964 6 9
24-Pergunnahs	5,862 8 3	3,614 10 6	2,247 13 9
Total ...	34,495 9 7	14,231 5 1	20,264 4 6

* Of which Rs. 7,716-3-10 is the balance of 1867-68.

ORISSA DIVISION.

ORISSA.
E. W. Molony, Esq.

From E. W. Molony, Esq., *Officiating Commissioner of the Orissa Division, to the Officiating Junior Secretary to the Government of Bengal, Judicial Department,—(No.* 565, *dated Cuttack, the 4th February* 1870.)

I have now the honor to reply to your No. 2122, dated the 9th of October.

2. The last of the district replies, that from Cuttack, was only received by me on the 2nd instant, which is the reason of the delay which has occurred.

Madras Act approved.

3. All the district officers are of opinion that, in the event of legislation being considered necessary, the form of the Madras enactment is more suitable to the country than that of the English statutes which form the basis of the law proposed by the Agricultural and Horticultural Society. The draft, however, of the Society is simply declaratory of the right of the Government to make regulations, and does not attempt to define how the objects contemplated can be best carried out.

Difficulties.

4. It seems to me that any attempt at legislation on this subject is beset with very serious difficulties, and that however faultless our enactment may be in principle, it is hardly likely to answer its purpose.

5. In the first place it is to be remembered that, instead of the stock of the country being in the hands of a few farmers or graziers, there is scarcely a house in which several head will not be found. Instead of pastures being enclosed, all the cattle of the neighbourhood are

depastured on the fallow lands or village roads, and are herded together. They are all, as a general rule, ill-fed, and in a condition which predisposes them to disease. The owners are for the most part very poor, and quite unable to supply separate accommodation or pasture for diseased animals, or to pay the expense of having them tended in hospital pounds; on the other hand, they are forbidden by their religious prejudices to destroy even infected animals. ORISSA. E. W. Molony, Esq.

6. Any enactment I think should partly be of general and partly of exceptional application; that is, the general clauses should always be in operation, and should provide for intimation being given to the zemindar and police of the outbreak of the disease; should empower the former or his local agents to nominate the headmen of the village to secure, under penalties, the means of segregating and tending diseased animals, and for the disposal of carcasses, reporting the measures taken through the chowkeedars; should prohibit the sale, either in open market or privately, of any diseased animal, imposing the penalty on the seller; should provide a penalty for allowing a diseased animal to enter a drove of cattle on the march, or collected in large herds for grazing purposes in localities appropriated to that purpose. General provisions. Notice. Segregation. Traffic. Movement of sick.

7. The special and exceptional provisions should only be applicable to a district where it has been proclaimed as an infected one. Hospital pounds might then be established in convenient localities, and a special agency be employed to treat and, if possible, obliterate the disease. Special provision. Pounds.

8. In such districts the trade in hides might be prohibited, and all import and export of cattle be put a stop to. It would, I think, only be in very exceptional cases that a district would have thus to be put in quarantine if the general provisions of the proposed enactment were properly enforced; and it is probable that by crediting all penalties imposed to the Pound Fund, it would be in a position to supply the expenses entailed by the introduction of special treatment and tending diseased cattle. I think, however, that it should be a recognised principle of the law that each village should provide for the treatment of diseased cattle in the first instance, and I would allow the Magistrate to award a portion of the penalties for non-reporting the outbreak of disease to informers. Hides. Quarantine. Expenses.

9. In time I do not see why the village cattle hospital should not become a commercial institution of a most beneficial character as long as the compulsory slaughter of cattle does not form part of the scheme. I think we can rely upon the sympathies of the people of Orissa, but without legislation, their great apathy and listlessness will prevent their doing anything in the matter. Pound Hospitals self-supporting.

10. I beg to enclose a statement of the receipts and disbursements and balances of the Pound Fund for 1868-69 as directed.

Statement showing the Receipts, Disbursements, and Balance of the Pound Fund.

Districts.	Receipts during 1868-69, including balances of former years.	Disbursements in 1868-69.	Balance.
	Rs. As. P.	Rs. As. P.	Rs. As. P.
Cuttack	5,357 13 1	1,891 7 1	3,466 6 0
Pooree	1,176 5 0	1,167 10 9	8 10 3
Balasore	2,411 11 9	1,092 0 1	1,319 11 8
Total ...	8,945 13 10	4,151 1 11	4,794 11 11

DACCA DIVISION.

DACCA.

From F. B. Simson, Esq., *Commissioner of Dacca, to the Secretary to the Government of Bengal, Judicial Department,—(No. 125A, dated the 1st April 1870).* F. B. Simson, Esq.

I have the honor to acknowledge the receipt of the Officiating Junior Secretary Mr. Mackenzie's letter No. 2122, dated 9th October last, with its enclosures, requesting my opinion as to the form which legislative enactment should take for the prevention of the spread of cattle disease in Bengal, and to report as follows.

2. *Backergunge.*—The Magistrate of this district observes that an Act similar to Act II of 1866, passed by the Governor of Fort St. George in Council, can, he thinks, be safely applied to Bengal with this addition, that a provision be made in the Act for punishing the owners of the diseased cattle if they neglect to give information to the Hospital Pound-keepers in accordance with the provisions of section 4 of the Act, and with the addition of the clauses of the draft Act furnished by the Secretary to the Agricultural and Horticultural Society. That with regard to the second question, the Magistrate states that the shepherds, who are to be appointed at each of the police stations and outposts in his district, could hardly be entrusted with the duties of Hospital Pound-keepers. He therefore suggests that a Hospital Pound-keeper, well vrsed in the treatment of cattle disease, be appointed at each of the sub- Madras Act approved. Additional clauses. Agency.

DACCA.
F. B. Simson, Esq.
Expenses.

divisions in his district; he should proceed at a moment's notice to any place within his jurisdiction where the disease breaks out. That with regard to the third question, he adds that the only available fund for this purpose of carrying out the provisions of the law into effect in his district is the Cattle Fine Fund under Act III of 1857.

3. *Cachar.*—The Deputy Commissioner of this district states that he has communicated both personally and by letter with several planters and landholders on the subject, but he has been unable to induce any of these gentlemen to hazard an opinion on a subject of which they have no practical experience. That as far as regards legislation on the subject, he sees no reason to doubt that the Madras Act, or something very like it, might be introduced into this part of Bengal. That the draft Act submitted by the Agricultural Society appears to him to be quite unsuited to the circumstances of this country. That section 8 of the draft Act seems to be extremely objectionable; section 15 of the Madras Act is all that is necessary for the purpose. That the clause in section 9, by which a person would be liable to be summoned on the exhibition of any information in writing, would lead, he is convinced, to serious abuses. That in fact there is no necessity for any special judicial procedure; the ordinary criminal procedure in petty cases seems to him to be all that is necessary.

Legislation not advisable or practicable.

4. *Dacca.*—The Magistrate of the district reports that he is of opinion that, properly speaking, there has been no cattle disease in his district. That there has been severe illness and great mortality among the cattle of the three thannahs he has picked out as having suffered most from sickness, but he is of opinion that this is no new disease, but merely the ordinary cow-pox. That the symptoms were not abnormal, and the people themselves seem to consider that it was the well known disease above named. That taking his district alone, and looking at the very small number of deaths as compared with the total number of cattle, he does not consider that legislative interference is necessary, or in fact possible, without a very powerful and expensive staff to carry out the provisions of the law.

Native farriers recommended.

5. *Furreedpore.*—The Magistrate of this district reports that, *as to the machinery* for carrying out the proposed new law, he would recommend the employment of a certain number of native farriers, one to be stationed at each thannah and outpost, to be under the supervision of the police officer at the said thannah or outpost, under the general orders of the Magistrate. That all reports and informations must be conveyed to the Magistrate through the local police officers; it will be vain to expect the zemindars or villagers to act spontaneously in his district. That there are no indigo planters or European landholders, and most of the large native landowners are absentees. That the police could report all cases of an outbreak of cattle disease to the Magistrate, who would direct the police and farrier what to do; the expenses can be met from the pound funds.

Legislation necessary.

6. *Mymensing.*—The Magistrate of this district reports that he has asked the opinions of two landholders, Mr. Manson and Baboo Kashikishore Roy. Both admit that legislation is necessary, but give no opinion in detail as to how the Act will work. Baboo Kashikishore considers that subordinate police officers are not in a position to be invested with powers under the Act, and that killing cattle is opposed to the customs of the Hindoo community. That he quite agrees with him as to the first objection, but he thinks that the latter objection will not give any trouble in practice. That the Act seems to have been drafted with a desire to follow the English law, but betrays considerable want of knowledge of Indian procedure. That his special objections to it are as follows:—

Objections to the draft Act.

7. That section 4 seems to him very badly worded. There is no definition of "district officer" or "head man of a village," and unless the Act defines these persons, it is probable confusion will ensue. Again, a Justice of the Peace, as such, possesses no jurisdiction in the Mofussil. To give jurisdiction he must also be a Magistrate. The words "or other person having jurisdiction in the place" are very vague. If they refer to the sub-divisional officers, it should be so expressly stated.

8. That he objects to chowkeydars possessing such power as is given to them by section 4. They are at present in an undefined position, and subject much more to zemindary influence than to that of Government. He would leave the appointing of "head men" to the District or Sub-divisional Magistrate, and only allow him or the chowkeydar power pending report to the nearest police station. That as to section 8, he would add a clause defining abetment to be "abetment" as defined by the Penal Code, with the consequent penalties. That sections 9, 10, 11 might be dispensed with, unless special provision for European British subjects is necessary in favor of the Criminal Procedure Code. That section 13, as it now stands, is opposed to section 68 of the Criminal Procedure Code, and would prevent a district officer from taking cognizance of a case without a complaint.

Madras Act approved.

9. *Sylhet.*—The Magistrate of this district states that, supposing skilled agency can, to a sufficient extent, be provided in the manner suggested in Mr. Eden's letter No. 808, dated 21st June 1869, the Madras Act, if applied to Bengal, would, in his opinion, be well adapted to meet the end in view, but it would also, it seems to him, be necessary at the same time to provide by law for the responsibility of landholders and chowkeydars in the matter of giving

Early notice.

notice of the outbreak of the disease, in order to secure timely information being afforded to the Government and the local authorities as to the parts of the country in which it might be

DACCA.
F. B. Simson, Esq.

requisite to put in force the Act. That the expense, in his opinion, would be properly met from the Pound Fund. He does not think that the plan of working through the headmen of villages, as suggested in the Agricultural and Horticultural Society's letter, would succeed. Such of the preventives suggested in paragraph 4 of their letter as are not enforced by the Madras Act might, he imagines, be provided for by the enactment of bye-laws in that sense under section 18 of said Act.

Expenses.

10. In my own opinion, I think the Government of Bengal cannot do better than adopt the Madras Act in its entirety. I see no objection to it.

Madras Act approved.

11. The Act should, I think, be worked through the Police and the Pound-keepers.

12. I would also make the punchayets under the proposed Chowkeedary Act responsible for giving information of the outbreak of the disease.

Skilled agents.

13. I would attach to each sub-division, or if that arrangement is too expensive and impracticable, to every zillah, a person qualified to decide if cattle are thus diseased, and to direct the treatment they are to receive; these persons to be under the sole direction of the Magistrate of the district.

Expenses.

14. All fines connected with the Cattle Trespass Acts, and the surplus produce of pounds from all districts, infected or not, might be consolidated quarterly into one sum at the disposal of the Government of Bengal, and might then be distributed as prevalence of disease in the different districts might necessitate. If this fund should be found in practice to be insufficient, I would then consider in what way it might be supplemented, seeing that except where the disease prevails expense would be unnecessary, and hoping that with proper vigilance the disease may soon disappear. I think that a trial of my proposed source for funds might be allowed before other sources are sought for.

Slaughter objected to.

15. I am averse to stronger measures than the Madras Act legalizes; it is almost impossible to expect absolute slaughter, or even measures likely to end in absolute slaughter, of cattle to be carried out, or more than originated in the most inefficient manner by Hindoos, who own the herds of cattle and buffaloes all over Bengal which produce the ghee, cheese, and milk consumed as daily necessaries by the whole population. I have no objection whatever to any measures, however stringent, regarding cattle for sale or for export, or as to carcasses or disposal of hides, a trade chiefly carried on by the most disloyal of Mahomedans; but in carrying out the proposed enactment, I would pay all respect that is possible to the religious feelings of the Hindoos, a most loyal and peaceable set of subjects, to whom the cow is as a deity.

Prejudice as to slaughter.

16. As an instance of the objection of Hindoos to the slaughter of cattle, even when they have been sold, I would refer to a curious fact. The gentlemen of Mymensing found that cattle which were useless for ploughing purposes, from vice, ill-temper, &c., were to be bought exceedingly cheap; as soon as the Hindoo community found that such cattle were bought and slaughtered by the sahebs for the fox-hounds, the sale was stopped throughout the district.

Losses from disease.

17. The effect of the disease is in no way concealed or unknown; it has killed nearly the whole of the herds of wild buffaloes in Sylhet. In December I was out shooting with the leading Mahomedan zemindar of that district, and I remarked the total absence of wild buffaloes in plains peculiarly suited for them, and was told that disease had entirely annihilated them or brought them to such a state that, when a few survivors were seen about, they were immediately attacked by the natives and destroyed; the herds of tame buffaloes, though not indeed annihilated, were terribly thinned, and their numbers are very limited now.

Help from cattle owners.

18. In the districts under my control, cattle may be regarded as yielders of daily produce and as ploughing cattle only; the number killed for food is not one in one thousand; and short of absolute slaughter being made compulsory by legal enactment, and provided that no harassing tax be connected with the procedure, I think the landed proprietors of the country would soon assist the Government in stamping out the plague.

19. A statement called for in paragraph 3 of your letter is herewith submitted.

Statement showing the Receipts, Disbursements, and Balance of the Pound Fund under Act III of 1857 *for each District in the Dacca Division during the year* 1868-69.

Districts.	Balance of last year.	Receipts of 1868-69.	Disbursements.	Cash Balance.	Remarks.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Backergunge	275 6 10	1,082 9 0	914 3 1	443 12 9	
Cachar	200 0 0	667 10 4	568 11 8	298 14 8	
Dacca	4,982 1 6	4,463 6 6	1,794 10 6	7,650 13 6	
Furreedpore	10,291 8 11	3,256 13 3	1,559 9 3	11,988 12 11	
Mymensing	5,298 12 0	6,358 7 0	2,157 15 8	9,499 3 4	
Sylhet	583 1 11	2,311 3 3	1,141 13 2	1,752 8 0	
Total ...	21,630 15 2	18,140 1 4	8,156 15 4	31,634 1 2	

CHITTAGONG.

CHITTAGONG DIVISION.

Lord H. Ulick-Browne.

From LORD H. ULICK-BROWNE, *Commissioner of the Chittagong Division, to the Secretary to the Government of Bengal, Judicial Department,—(No.* 78, *dated* 18*th February* 1870).

I have the honor to acknowledge the receipt of Mr. Mackenzie's letter No. 2122, dated the 9th October 1869, with enclosures, regarding the proposed enactment for the suppression and prevention of the spread of cattle disease in Bengal.

2. My subordinates whom I consulted on the subject report as follows.

Draft Act not suitable.

3. Mr. Raban, the Officiating Magistrate of Chittagong, states: "I think the draft Act proposed by the Secretary to the Agricultural and Horticultural Society not suited for the local circumstances of any Bengal district with which I am acquainted.

Madras Act approved.

"I think that the Madras Act is more suitable for the basis of legislation for Bengal."

4. Mr. Cowley, the Joint Magistrate, suggests that paragraphs I, V, and VI of Mr. Blechynden's draft Act might be embodied in the Bengal Act. I would endorse this recommendation, and enact that any breach of clause I should be punishable with a fine not exceeding Rs. 100 for each head of cattle so imported.

5. Mr. Whinfield, the Officiating Magistrate of Noacolly, after consultation with the Civil Surgeon and Mr. Paxwell, a respectable zemindar, reports that:—

Early notice.

"As regards the form to be taken by legislation, the first requisite, it appears to me, is to secure prompt information of outbreaks of the disease and deaths; and with this view, owners of cattle, zemindars, and chowkeydars should be compelled to report outbreaks and instances of great mortality. Also farmers of ferries and toll-gates, owners of huts, should be compelled to report the passage of infected cattle.

"The Act must provide a penalty for omission to report, as, owing to the too narrow definition of 'offence' in the Penal Code, and the unfortunate limitation of the correcting Act IV, 1867, section 176 of the Penal Code will not apply.

Penalties.

"In the next place the Government should be empowered, on the report of the local authorities, to direct the enforcement in any district of any or all of the preventive measures recommended in paragraph 4 of the Society's letter. Substantial penalties are absolutely necessary to secure obedience to such orders. In proof of this I may mention that, during my recent tour in Bamni, I was told that in some cases the carcasses of cattle which had died of the disease, and had been buried under the superintendence of the Police in accordance with the recent Government orders, had actually been dug up again for the sake of the skins directly the Police had gone.

Pounds.

"I do not think the Madras system of hospital pounds would succeed anywhere, except perhaps in the neighbourhood of large towns, for the reason that either pounds must be established in such numbers that there shall be one for each locality, in which case the cost would be prohibitory, or, on the other hand, the infected cattle must be marched long distances to reach the pounds; in which case the disease would be spread in fresh parts of the country. Another reason against such pounds is, that the similar disease in Europe baffled all medical treatment, and doctors are seemingly not yet agreed as to its nature and mode of treatment. Under these circumstances medical treatment at present can only be tentative, and I do not see the use of establishing hospitals for such a doubtful benefit. I think the only possible way

Travelling farriers preferred.

of supplying medical treatment is to have a farrier attached to each district to travel about and treat the disease where he finds it; also some approved book on the subject might be circulated to all medical officers now in the service, and the subject might be required to be studied by all future candidates for medical appointments.

Cost.

"I do not see that any considerable cost need be incurred in working the Act. I think any expenses incurred in burying carcasses, and the loss of the profits of hides and meat of diseased cattle, should fall on the owners. On what principle have they any more right to compensation than a butcher has for being prohibited to sell diseased meat, or than other traders have on account of being prohibited from committing other nuisances profitable to them, or those persons detained in quarantine have for their loss of liberty and expenses? On

Compensation.

these grounds I venture to think that the grant of compensation to the cattle owners in England is not a proper precedent to follow, but wrong in principle."

Slaughter not approved of.

6. Mr. Lockwood, the Officiating Magistrate of Tipperah, states that "there appears nothing objectionable in the draft Act proposed by Mr. Blechynden, but there would be great difficulty in 'stamping out' cattle disease in a Hindoo village by a judicious slaughter of infected cattle. The pious Hindoo would rather see his family perish before his eyes than have recourse to such an unholy expedient. The Mussulman community also would resort to a thousand subterfuges rather than give up the faintest hope of saving cattle.

Regulation of markets and prevention of movements of sick cattle.

"The only preventive to the disease spreading in the present state of society will be, I think, in placing the large cattle marts under the surveillance of the Police and preventing the sale and importation of diseased cattle. Many of the natives are very knowing on the subject of cattle and their diseases, having lived amongst them from their infancy. Such

CHITTAGONG.

persons, not otherwise objectionable, might be selected to report on the cattle at the principal hâts and fairs. At all events, the mere fact of the Government taking up the matter would intimidate persons, who otherwise would deal in diseased cattle with impunity." Lord H. Ulick-Browne.

7. My own opinion is that, if we wish to do any good, we must adopt measures similar to a certain extent to those which saved Ireland from loss while English farmers were ruined by the cattle disease. Not to allow for the apathy of the people of India in the place of the hearty co-operation of every individual in Ireland, where the importance of the State was thoroughly understood, the provisions must be more stringent. I would provide by the Act a heavy penalty for taking any animal with disease on it out of the village, or near any other cattle in the village, on any pretence whatever; and another, if a report is not made at the thannah within twenty-four hours of the attack of illness. The village chowkeedars, too, should be specially made responsible for the observance of these provisions. Lastly, I would provide that all cattle attacked with disease may be slaughtered by the Police and buried, the cost being charged to the owner. To meet the case of districts, or places where the Hindoo feeling is very strong indeed, it should be provided that, if the owner prefers it to his animal being killed, he may erect two bamboo fences 12 feet apart and put the diseased animal inside the inner one till its death. Stringent measures advised. Early notice. Slaughter recommended.

8. Such simple provisions as these could be easily circulated and understood, when a lengthy, elaborate, and gentle Act, providing for reports being made, and then for notices and prohibitions being issued, would not only not be understood, but would allow full time for fatal mischief, while its elaborate provisions were being gone through one after the other. Prompt action necessary.

9. There should be a section empowering Government to pass any rules in furtherance of the object of the Act, and penalties for each breach of them up to Rs. 100. Penalties.

10. I quite agree with Mr. Whinfield that no compensation should be given when diseased cattle are killed. It might be otherwise necessary to impose a special tax, and I think that the people would understand that our proceedings were for the benefit of the public. Compensation.

Statement showing the receipts, disbursements, and balance of the Pound Fund under Act III of 1857 *during the year* 1868-69.

DISTRICTS.	Receipts.	Disbursements.	Balance.	REMARKS.
	Rs. As. P.	Rs. A. P.	Rs. A. P.	
Tipperah	6,176 14 10	2,563 9 0	3,613 5 10	
Noacolly	4,035 9 0	2,706 0 0	1,329 9 0	
TOTAL ...	10,212 7 10	5,269 9 0	4,942 14 10	

BURDWAN DIVISION.

BURDWAN.

From C. T. BUCKLAND, Esq., *Commissioner of Burdwan, to the Secy. to the Govt. of Bengal, Judicial Dept.*,—(*No.* 240*T, dated* 27*th April* 1870). C. T. Buckland, Esq.

With reference to your letter No. 2122, dated the 9th October last, and its enclosures, I have the honor to report that I have consulted the District Magistrates of this Division and (through them) several of the most influential and wealthy landholders on the expediency of legislative action for the prevention of the spread of disease among cattle in the Lower Provinces, and as to the form which that action should take. The following is an abstract of the replies received from the officers of the several districts.

2. *Beerbhoom.*—Mr. D. J. McNeile, the Magistrate of Beerbhoom, observes that the measures needed to check the mortality among cattle may be divided into two classes, remedial and preventive. He thinks that the system of hospital pounds adopted by the Madras Legislature can only be efficacious in places where the disease has not yet assumed an epidemic form. Where the contagion has spread further, hospital pounds will be found almost useless, unless they can be established in almost unlimited numbers, with trained pound-keepers and attendants attached to them. No machinery that can be provided, except at a great expense, will suffice for the purpose, because he believes that on the appearance of the epidemic in any particular thannah, a few days will put the evil beyond the reach of all remedial measures. Pound system not applicable to widespread disease.

3. If the owners of cattle could be taught to treat their own animals, or if we could call into existence a body of Mofussil Veterinary Doctors throughout all the agricultural villages in the country, some good, Mr. McNeile thinks, might be done in the way of remedial measures; but there is no chance of either of these objects being attained. Cattle doctors.

BURDWAN.
C. T. Buckland, Esq.

4. Mr. McNeile believes that the hospital pounds will be "*interesting little establishments*" to test the success of Mr. Farrell's remedies on particular animals in places where the disease has but just shown itself, and may possibly be instrumental, in conjunction with other measures, in putting a stop to such incipient infection. It is, however, more important to devise some general measures to prevent the spread of the contagion from one tract of country to another, and he proposes the following scheme.

General measures suggested.

Early notice.

5. Let the chowkeedars of all villages be ordered, under special penalty, to report any appearance of the epidemic. On such report being made, let it be the duty of the officer in charge of the Police Station, without waiting for orders from any superior authority, to proceed at once to the infected village, and if he finds the report correct, there and then to stop the exit of all cattle for any purpose whatever from the boundaries of that village until the restriction shall be removed by the orders of the Magistrate, to whom the Police Officer's proceedings should be promptly reported. Let any infringement of the order prohibiting the removal of the cattle be summarily punishable on conviction before any Magistrate, and give the Police authority to arrest any person in the act of such infringement and to impound the cattle; such cattle to be subsequently sold, if necessary, to cover the amount of any penalty that may be inflicted on the offender.

Prompt stoppage of movements,

under penalty.

Inspectors.

6. If Government would maintain a staff of trained Inspectors, one or more of whom could be supplied to any district on the application of the Magistrate, they might be deputed to the proclaimed tracts with plenary powers to direct the disposal of all tainted animals, either by placing them in temporarily established pounds for purposes of segregation and treatment, or by slaughtering them and burying the bodies.

Segregation or slaughter.

Burial.

7. Each Inspector should be empowered to employ as many moochees or other low caste men as he may require for the latter purposes, and he should be bound to see their operations carried out in his presence.

Expenses.

8. Mr. McNeile presumes that the expenses entailed by such operations must be charged to the pound fund, and he suggests that the income from fines to be inflicted for breaking bounds, disobedience to the Inspector's orders, &c., will partly or wholly counterbalance the expenditure.

Legislation necessary.

9. *Burdwan.*—Mr. W. Ward, the Magistrate of Burdwan, admits the necessity of legislative action on the subject, and thinks that the Madras Act II of 1866 might, by a few additions, be made applicable to Bengal. The only objection which, he thinks, might be raised to the Act would be to the first part of section 10 (*i. e.*, the destruction of the diseased cattle), on the ground of the veneration which the Hindoos have for cattle. On this point Mr. Ward observes that, on the one hand, it would be highly unadvisable to outrage the feelings of the people, but, on the other hand, it is better to legislate and create a power which might only be used in extreme cases, and only then with the greatest care, than that the officers of Government should not possess the power of slaughtering diseased cattle, when such a method alone could put a stop to the spreading of the disease.

Slaughter objectionable.

Penalties.

10. Mr. Ward is further of opinion that sections 4 and 5 of the draft Act submitted by the Agricultural and Horticultural Society might be adopted in framing an Act for Bengal, and he thinks that the punishments suggested under the provisions of this draft Act would be more suitable to the several offences than those mentioned in the Madras Act.

Early notice.

11. Mr. Ward advises the adoption of a provision obliging the gomashta, mundul and chowkeedar severally to give instant information to the authorities on the breaking out of any serious attack of the cattle disease within the limits of their villages. He thinks that the Magistrate of the district might be empowered to establish hospital pounds when such pounds might be deemed essential. These should be under the supervision of the Police, and, therefore, as near as possible to the present cattle pounds. In fact, the hospital pounds and the ordinary pounds might almost be worked by one pound-keeper or Mohurrir, whose salary should be sufficient to secure a better man than the ordinary run of those who now have the management, and a premium might be offered to those who were able to detect and treat cases of murrain.

Pounds.

Pound-keeper.

Funds

12. As to the source of funds for carrying out these measures, Mr. Ward is of opinion that the provisions of the Madras Act might be adopted, and that, in cases of cures, the owners of the cattle should be made to pay the cost of medicine and food, and in all other cases the expenses should be defrayed from the surplus funds of the cattle pound fund established under Act III of 1857.

Legislation necessary

Baboo Joykishen Mookerjee,
„ Jogessur Sing, and
„ Shumbhoo Chunder Roy.

13. *Hooghly.*—Mr. Pellew, the Magistrate of Hooghly, consulted the zemindars named in the margin, who are of opinion generally that legislative action is necessary.

14. Mr. Pellew remarks that, whilst the Madras Act II of 1866 provides for the establishment of hospital pounds to which the cattle can be removed under penalties for neglect, the draft Act of the Horticultural and Agricultural Society provides merely for the destruction of diseased cattle and the prevention of transportation or sale of such animals.

BURDWAN.
C. T. Buckland, Esq

15. Moreover, the Madras Act provides a special staff of pound-keepers, whose business it is to search for cases of disease, whilst the draft Act of the Society leaves the enforcement of the Act to the headmen of the village, police and chowkeedars.

Both Acts applicable.
Ferries.

16. It appears to Mr. Pellew that, in some parts of Bengal, some of the objects of both Acts might be enforced with advantage, and for others the Madras Act would be sufficient with slight additions. To prevent the transportation of diseased cattle, it would, he thinks, be sufficient if an officer were appointed with two assistants at the principal ferries, say 20 or 30 for all Bengal, to seize infected cattle.

Burying and burning.
Expenses.

17. With regard to the subject of preventing the spread of disease amongst cattle in any particular locality, Mr. Pellew thinks that the provisions of the Madras Act could only be worked if, in addition to the pound-keeper, a staff of persons able to perform the burying and burning of the carcasses of diseased cattle could be entertained. The balance of the pound fund as at present worked would admit of a pound-keeper on Rs. 10, a rakhal or herdsman on Rs. 4 in the 14 pounds in the district, with a surplus for repairs and contingencies, but would not provide for the expense incurred on officers at ferries.

Baboo Koomar Bejoy Keshub Roy.
„ Heeralal Seal.
„ Poorno Chunder Roy.
„ Hem Chunder Ghose.

Legislation necessary

18. *Howrah.*—Mr. Makgill, the Magistrate of Howrah, reports that he consulted the zemindars named in the margin. Only three of them have replied to his letters, and they concur in the necessity for legislation, although they differ as to the means to be adopted.

Expense of pounds.

19. Although no estimate of the establishment for hospital pounds is suggested, Mr. Makgill calculates that the surplus of the pound fund would not be more than sufficient to support one, or at most two such establishments, and, if the district were infected extensively, he thinks that at least six such pounds would be required, and he puts the expense at about Rs. 2,000 per annum roughly.

Taxation,

20. With regard to the form which taxation should take, the gentlemen who have replied to the Magistrate's call hold completely different opinions: the suggestion made to them by the Magistrate was, whether it was practicable that every owner of cattle in an infected district should pay a certain sum per head of cattle, and this was accepted by Baboo Hem Chunder Ghose; but Baboo Bejoy Keshub Roy of Andool is of opinion that the zemindar should maintain two native (veterinary) surgeons for each five infected villages in their zemindaries, the expense being raised by subscription among the ryots, in which the zemindars will always bear a part. The District Superintendent of Police, on the other hand, reported that he would be disposed to suggest any measures of taxation which could exempt the chief sufferers from the epizootic disease, and would throw the burden on those better able to bear it, *viz.*, the owners of cattle in the uninfected villages, "*who would reap the chief benefit from crops.*" He would also levy a rate of 4 annas on every head of cattle brought to market, to be realized from the seller as well as the purchaser.

levied from owners of healthy cattle.

Objections.

21. Mr. Makgill thinks that the only objection to the latter plan would be that, if isolation of cattle in infected districts were strictly carried out, the number of cattle which would be brought to market would be very small and the tax realized inconsiderable. Still, as a tax on traffic, it appears to them a defensible measure where traffic means the probable extension of disease. As regards practicability of realization, the plan would have great advantages.

22. The proposal to levy the expense partly from zemindars and partly from the ryots made by Baboo Bejoy Keshub Roy could not conveniently be carried out by Government agency. The zemindars, however, having an obvious interest in the ability of the ryot to cultivate, would be justly liable to contribute, and in the southern part of the district the estates are extensive, so that this project would be practicable, while not unfair.

Capitation tax.
Difficulties.

23. The suggestion that the owners of cattle should pay a rate per head has, in Mr. Makgill's opinion, serious difficulties. When an intelligent resident zemindar gave his attention to the subject, it would no doubt be practicable, and would be perhaps the fairest in its incidences of any mode of taxation; but zemindars are not always either ready or able to lend help in such cases. In most places it could only be worked successfully through the village people, and would probably lead to evasion and, perhaps, to the secret removal of cattle to avoid the tax.

24. Mr. Makgill would therefore recommend a rate at the market and a rate on the zemindars.

Madras Act applicable.

25. With regard to the provisions of the Madras Act, all of them appear to him capable of adaptation in this district without material change.

26. *Midnapore.*—Mr. J. D. Ward, the Magistrate of Midnapore, reports that he could not get any information from the zemindars and planters of his district. The report received from him is therefore founded on his own experience, aided by that of the District Superintendent of Police.

BURDWAN.
C. T. Buckland, Esq.
Madras Act approved.

27. While admitting the expediency of legislative action on the subject, and that the Madras Act would be mainly applicable to this district in common with Bengal generally, the Magistrate suggests the following modifications, which are worth noticing:—

Clauses of draft Act might be added.

A.—That the provisions of sections IV, V, VI, and XIII of Mr. Blechynden's draft Act should be introduced in it.

Expenses.

B.—That the expenses of the keep and treatment of animals should be borne at least partly by the owners instead of entirely by the State, as section IX of the Madras Act provides a discretion in the matter being given to the Magistrates.

Penalties.

C.—That all offences against the Act should be made absolutely penal and punishable by fine and imprisonment, fines being realizable and commutable in the same manner as fines under the Penal Code.

Quarantine pound.

D.—That there should be a quarantine pound for all cattle brought from other districts during a murrain, where such cattle might stay for a short period under observation.

Veterinary Pound-keepers.

28. Mr. J. D. Ward believes that a simple Act embodying the above provisions could be worked very well indeed under the supervision of Magistrates by intelligent Veterinary Pound-keepers. He does not think that any elaborate machinery or establishment would be required, and he believes that the pound fund, if properly worked, would cover all expenses.

Legislation necessary.

29. *Commissioner's opinion.*—The opinions of all the officers and zemindars who have been consulted concur as to the necessity for legislation, and they only differ as to the details of the enactment and the machinery by which it is to be worked.

30. I have lately been in communication with Dr. Hallen, the President of the Commission which is now inquiring into the extent and ravages of the cattle plague, and I am informed by that gentleman that the disease is really rinderpest and indigenous to the country of Bengal. If this fact is admitted, it must necessarily affect the nature of the measures to be adopted for the repression of the disease, for its total extermination can hardly be expected.

Slaughter and stoppage of movements.

31. The leading principle, therefore, to be observed in legislation for such a disease must be to give the local authorities absolute power to act summarily and vigorously wherever the disease shows itself, and this must involve authority to destroy diseased cattle and to prevent the removal of cattle beyond the boundaries of infected and prescribed tracts.

Both Acts applicable.

32. The draft Bill proposed by the Agricultural and Horticultural Society contains the groundwork of an enactment which will provide for the most important powers requisite to carry out these principles, and it would be easy to incorporate with it those parts of the Madras Act which deal with the treatment of sick cattle. The suggestions offered by Mr. McNeile, the Magistrate of Beerbhoom, as noted in paragraphs 5, 6, and 7 of this letter, provide for most of the measures required practically.

Veterinary establishment,

33. For the general treatment of the disease throughout the country, there must be a veterinary establishment constituted, subject to the Government of Bengal, whereby a class of trained practitioners may be organized, to be employed whenever and wherever necessary in combating the disease.

available for emergencies.

34. In each district in which the disease usually breaks out periodically, one or more of these practitioners should be permanently maintained, being at the disposal of the District Magistrate for employment in whatever village the disease shows itself. Where the services of only one or two such practitioners are insufficient, owing to the magnitude of the outbreak, a further staff under special superintendence should be brought from the central department in Calcutta, and the head of the department would have authority to draft the practitioners of one district temporarily to another district where their services are more urgently needed.

Expenses.

35. It seems that the surplus proceeds of the district cattle trespass fund would go far towards the support of the local establishment at its ordinary strength, and, indeed, for the maintenance of the department generally. There might be fines and penalties imposed for neglect of duty in giving information of the outbreak of the disease and for disobedience of orders under the Act, which would tend to increase the funds for the support of the establishment generally; but it would be of importance to avoid inflicting penalties on men already impoverished by the loss of their cattle: and I think it would be very undesirable to impose a tax of any sort on cattle generally, as suggested by the Magistrate of Howrah and the District Superintendent of Police of that district.

Model farms

36. In every district at the sudder station there should be a model farm which might easily be made self-supporting if properly managed, and the local establishment of veterinary practitioners would thus belong to the model farm when not called away to the local repression of the cattle plague. But I only venture to throw out this hint as showing how the treatment of the cattle disease should be merely a part of a much larger scheme for the promotion of agricultural and horticultural improvement, which itself would involve the establishment of an agricultural department in the Government of India, on which subject it would be out of place to enlarge here.

37. I beg to submit the statement called for in paragraph 3 of the Government orders under reply. The return does not show the figures for the district of Bancoorah, as the

Magistrate of that district, though repeatedly called on, has not yet sent in his report, and it is useless to wait any longer for it. BURDWAN. C. T. Buckland, Esq.

Statement showing the Receipts, Disbursements, and Balance of the Pound Fund under Act III of 1857 *for each District in this Division during the year* 1868-69.

DISTRICTS.	Receipts.	Disbursements.	Balance.	REMARKS.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Beerbhom	1,692 1 3	1,103 5 0	588 12 3	
Burdwan	2,666 10 0	1,444 12 0	1,221 14 0	
Hooghly	3.363 4 3	1,234 5 3	1,128 15 0	
Howrah	1,061 3 6	493 3 0	568 0 6	
Midnapore	3,439 15 0	2,227 13 0.	1,212 2 0	
TOTAL ...	...	...	5,719 11 9	

CHOTA NAGPORE DIVISION.

CHOTA NAGPORE.

From COLONEL E. T. DALTON, C. S. I., *Commissioner of Chota Nagpore, to the Officiating Junior Secretary to the Government of Bengal,*—(*No.* 820, *dated* 31*st March* 1870). Colonel E. T. Dalton, C. S. I.

I have the honor to acknowledge your letter No. 2122 of the 9th October last, calling for a report as to the form that legislation in Bengal should take for the prevention of the spread of cattle disease. As directed, the Deputy Commissioners and other gentlemen, European and Native, have been requested to give their opinions. The replies* received are all submitted.

* Singbhoom, No. 672, dated 13th November 1869, with an enclosure.
Hazareebaugh, No. 99, dated 3rd February 1870, with three enclosures.
Lohardugga, No. 318, dated 19th February 1870, with an enclosure.
Maunbhoom, No. 552, dated 24th March 1870.

2. The question is one fraught with difficulties. It appears to me to be utterly absurd to suppose that law that works well in England in such cases must also work well in India; we might probably select a tract as large as England comprising the richest, most highly cultivated, most densely populated, and most thoroughly civilized part of Bengal, and, trusting to the co-operation of an intelligent and self-interested and wealthy community, introduce with success a Bill framed somewhat on the English model; but this is a question on which partial legislation will not answer. We must have a law that can be worked throughout the length and breadth of the land, and we must, I suppose, set aside all ideas if sanitary rules that require a large and costly staff to work them. Special law necessary for India.

3. It appears to me that our object should be to *command* the co-operation of the whole of the agricultural classes, to make it *their* business to carry out all the preventive measures necessary, and to lay down as accurately as possible what these should be. Co-operation of people necessary.

4. I would enact that, when disease of an infectious character breaks out in a village, a place with suitable shelter must be provided and set apart in or near the village for the reception of the cattle attacked, a herdsman placed in charge, and the places where the disease breaks out voided till they have been thoroughly cleaned and disinfected. Special hospital provided on outbreak.

5. In the event of the hospital not being provided by the people, the law should give the Magistrate power to impose a fine on the village, and the proceeds of the fine should be at once devoted to providing the cattle hospital and herdsman. Fine for neglect.

6. The owner of the cow-shed, or whatever the place may be in which the disease appears, to be obliged, under a penalty, to take the measures required for disinfecting it. Disinfection of cattle sheds.

7. The owner of the cattle first attacked to be responsible that immediate notice is given to the Police. The Police Officer receiving the same to be authorized and required to issue a proclamation placing the village, as regards cattle, under quarantine, and especially ordering that no cattle from that village shall be taken to any fair or market, or grazing ground resorted to by other cattle till the village be pronounced free from disease. Early notice. Proclamation. Stoppage of movements.

8. Any person infringing the above to be liable to fine. Penalties.

9. The Police Officer receiving information to proceed to the village and report, for the information of the Magistrate, the nature of the disease, the extent to which it has appeared, and if the provisions of the law have been carried out or not; if not, the Magistrate to issue an order provisionally imposing the fine, but subject to remission if the village community promptly take the matter in hand and complete the work within a given number of days, failing which the fine to be assessed at a given amount for every head of cattle in the village, and realized from the owners of the cattle accordingly; thus the fine will be imposed on those only who are interested, and with due reference to the extent of each person's interest. Report to Magistrate. Penalties.

10. The above, as it appears to me, provides in a ready and simple manner, without any expense to the State or introduction of a new class of officials likely to be as bad a plague to the people as the cattle disease itself, or without resorting to obnoxious cessing with

CHOTA NAGPORE. Colonel E. T. Dalton, C. S. I.

equally obnoxious collecting establishment, for the segregation of diseased cattle and purification and disinfection of places likely to breed disease, the proclamation of infected villages, and insulation of the cattle of those villages. There remains the disposal of carcasses and laws against the traffickers in hides.

Cremation. Slaughter. Burial.

11. We must give up all ideas of cremation as repugnant to Hindoo notions, and for the same reason orders for the slaughter of diseased cattle could not be carried out through their agency, but there is no valid objection to burying, and the owners of diseased cattle should be held responsible that all carcasses are so disposed of; in the event of carcasses being left exposed, and owners not forthcoming, the headman of the village or village chowkeedar to cause the carcasses to be buried, and a fine imposed on the village to meet the expense in the manner previously indicated.

Fine.

Hide trade.

12. In regard to traffickers, in hides, the Agricultural Society have suggested the best remedy, that is, to prohibit absolutely the skinning of carcasses of animals that have died of disease, under severe penalties.

SINGBHOOM. E. G. Lillingston, Esq.

From E. G. LILLINGSTON, Esq., *Officiating Deputy Commissioner of Singbhoom, to the Commissioner of Chota Nagpore,—(No. 672, dated Chyebassa, the 13th November* 1869).

With reference to your memorandum No. 3110 of the 15th instant, I have the honor to submit the statement called for in the 3rd paragraph of the letter, No. 2122 of the 9th October, from Mr. Secretary Mackenzie.

2. There are no planters or landholders in this district who are likely to have any experience or knowledge as to the form which legislative enactments should take for Bengal, having as their object the prevention of the spread of disease among cattle.

3. The diseases which have appeared from time to time in this district are the ordinary bussunt or gotee and a disease of the hoof called by the natives "koorai." For the treatment of the former, Mr. Farrell's instructions have been circulated in this district to the educated owners of cattle. Fortunately the disease has not lately shown itself in this district in an epidemic form. There have been one or two isolated cases reported to me from Dhulbhoom during the past year, but the disease did not spread.

4. The ryots themselves seem to have discovered a specific for the hoof disease, which, if applied in time, is said to cure in a few days. It is simply making the diseased animal stand in moist clay. If this is not done at an early stage in the disorder, the hoof completely rots off and the animal dies or has to be destroyed. I am informed that this disease is contagious.

Receipts, Disbursements, and Balance on account of Cattle Pounds during the year 1868-69.

NAME OF DISTRICT.	RECEIPTS.			DISBURSEMENTS.				BALANCE IN HAND.	REMARKS.
	Balance of last year.	Received during the year 1868-69.	Total.	Construction and repairs of pounds.	Salary of pound mohurirs.	Stationery, contingencies, &c.	Total.		
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Singbhoom ...	371 12 9	843 6 0	1,215 2 9	12 5 0	594 8 0	101 1 0	707 14 0	507 4 9	

HAZAREEBAUGH. Lieut.-Col. H. M. Boddam.

From LIEUTENANT-COLONEL H. M. BODDAM, *Deputy Commissioner of Hazareebaugh, to the Commissioner of Chota Nagpore,—(No. 99, dated 3rd February* 1870).

In acknowledging the receipt of your memorandum No. 3110, dated 5th November 1869, giving cover to correspondence as per margin, I have the honor to transmit herewith copies of answers from M. Liebert, Esq., Manager, Seetaghurra Tea Plantations, and the Managers of the Ramghur and Dhunwar estates to my applications to them for advice.

No. 2122, from Secretary, Government of Bengal, to the Commissioner, dated 9th October 1869.
Letter from Secretary, Agricultural Society, dated 20th September 1869, to Government of Bengal.

Legislation necessary.

While I perfectly agree with all that is urged by the Secretary to the Agricultural and Horticultural Society in his letter to the Government of Bengal, that some legislative action is required to prevent the periodical devastation of cattle by disease, I cannot help expressing my fears that, among a population and with a Police who do not know whether any disease which shows itself is infectious or not, the law, however mild it may be, will be used as an engine of grievous oppression.

Objections and difficulties.

HAZAREEBAUGH.
Lieut.-Col. H. M. Boddam.

Immediately it is known that a bullock or a cow has died in a village, no matter whether from old age or accident, the village will be reported as infected, while the appearance of the foot and mouth disease in a village will be followed by a request that the whole of the cattle of the village may be destroyed to stamp out the disease.

Inspector's duties.

If therefore any legislative action is taken, an office of Inspector of Cattle should be created, who should be bound, on being informed of the existence of any infectious disease in any district, to proceed there at once, and, after examining the diseased cattle, he should inform the Magistrate of the district in writing what measures, whether of segregation or of stamping out the disease, should be taken, and the Magistrate should be bound to carry out these orders by proclamation in the infected and neighbouring villages; these orders to have the force of law, and the parties found disobeying these orders should be made liable to arrest by the Police and punished by fine, and imprisonment in default of payment of fine.

Magistrate to order measures.

Penalties.

If considered necessary, the Act might lay down what orders the Inspector of Cattle should pass according to the nature of the disease found prevailing in the infected district or village.

RAMGHUR.
Baboo Kalidas Palit.

From BABOO KALIDAS PALIT, *Extra Assistant Commissioner, in charge of the Ramghur Estate, to the Deputy Commissioner of Hazareebaugh,*—(*No.* 112, *dated 6th December* 1869).

With reference to your memorandum No. 925, dated the 8th November 1869, forwarding correspondence regarding cattle murrain, I have the honor to state that, in my opinion, the adoption of some stringent measures by special legislation is absolutely necessary for the good of the people, the ignorance and apathy of the people requiring such a step. I should also think that the machinery proposed in the 11th, 12th, 13th, and 14th paragraphs of the letter of the Secretary to the Agricultural and Horticultural Society would act very well, especially as the new Chowkeedary Act, creating a municipal body in every village, is under contemplation.

SEETAGHURRA.
M. Liebert, Esq.

From M. LIEBERT, Esq., *Seetaghurra, to the Deputy Commissioner of Hazareebaugh,*—(*dated 26th November* 1869).

With reference to your memorandum No. 924, dated Hazareebaugh, the 8th instant, regarding the prevention of the spread of disease among cattle, I would remark—

Hospital sheds.

I think the best mode of checking any contagious disease in this district would be to get the villagers to build hospital sheds for each village, and that any suspicious cattle should be sent there and remain until they are better, or if they die, the whole carcasses of the animals should be buried.

Burial.

Expense.

The expense for such a building could be easily made by a collection from the villagers in proportion to the cattle and lands they own.

The chowkeedary or goraeth should be made responsible that all diseased cattle in his village be sent to the hospital shed, and, moreover, make the owners provide the needful food, &c., &c. As far as I know, the main object in preventing the spread of any cattle disease is, in the first instance, to remove the affected animal from the general herd.

Instance of success by segregation.

Last year the so-called cattle plague appeared among my bullocks, but by at once removing the cattle that showed the slightest symptoms of disease, I succeeded in checking it at an early stage.

Treatment of the disease I would leave to the natives. They have so many good remedies of their own that I consider interference on this point useless.

DHUNWAR.
Baboo Raj Gopal Roy.

From BABOO RAJ GOPAL ROY, *Manager, Dhunwar Estate, to the Deputy Commissioner, Hazareebaugh,*—(*No.* 36, *dated 2nd December* 1869).

I have the honor to acknowledge the receipt of your office memorandum No. 926, dated 8th November 1869, giving cover to Government letter No. 2122, dated 9th October 1869, with enclosures, on the subject of cattle disease, and in reply beg to report as follows.

2. Referring to the preventives suggested by the Secretary to the Agricultural and Horticultural Society, I respectfully beg to submit that, in enforcing the strict observance of these measures, it may be desirable to consult the convenience and feelings of the people in general, who are themselves interested in the success of the scheme, and without whose co-operation, I fear, such measures are not likely to produce the desired effect.

Co-operation of people necessary.

3. It will be observed that, in carrying out the first three of the preventives suggested by the Society, the hearty co-operation of the people is indispensably necessary, while the other three are such as can be enforced without any practical inconvenience to the mass of the people. It is therefore my object to lay before you the difficulties which may be in their way in giving effect to those measures with which they are closely concerned, and to propose such remedies as, in my humble opinion, are likely to obviate such difficulties.

DHUNWAR.
Baboo Raj Gopal Roy.

The segregation of all diseased cattle.

4. For the segregation of the diseased cattle the establishment of temporary pounds at reasonable distances in case of emergency is highly desirable, where the people may be bound by law to remove their cattle when infected for treatment. I fear no good can be expected if the people be left to themselves to make their own arrangements for the separation of the infected cattle from the healthy mass.

The removal, if possible, of all healthy cattle to a locality at some distance from the spot at which the disease first manifests itself.

5. The removal of all healthy cattle to a different locality is, in my humble opinion, impracticable, unless there be no objection to their being kept in the open air; but this even is impossible in the rainy season, when the disease among the cattle generally breaks out. As is generally seen, the poorer classes have no separate houses for the accommodation of their cattle, but are obliged to set apart a portion of their dwelling-house for the purpose, and most of those that have such accommodations cannot possibly afford to keep a spare shed or house for use in case of emergency. I am therefore of opinion that, instead of removing the healthy cattle, some alternative, if there be any, which may tend to purify the air of the place where the disease first manifests itself, may be introduced.

The cremation, if practicable, or, in its absence, the deep burial of the entire carcass including the hide.

Burial.

6. The cremation of the carcass, as far as bullocks and cows are concerned, is highly objectionable, inasmuch as these animals are held sacred by the Hindoos, and the cremation of their carcasses cannot be enforced on them without seriously wounding their religious feelings, which, I believe, is not the intention of Government to do; besides, the process is attended with much trouble and expense. I am not aware of any objection which the people may have regarding the burial of the carcasses; the latter course may therefore be adopted without any obvious difficulty. The immediate destruction of all infected cattle, referred to in paragraphs 16 and 17 of the Secretary's letter, is a remedy which cannot be introduced in a country inhabited by Hindoos.

Slaughter.

Agency.

7. As regards the agency through which the proposed enactment may be best worked, I am of opinion that the duty may be safely entrusted to the zemindars or their local agentse and in case of farmed villages, to the ticcadars; and that it may be lawful for them to delegat- the powers with which they be vested to the headmen of the villages, a list of such head,

Zemindars, &c.

men being annually submitted through the zemindars to the Magistrate for his confirmation. As a matter of course, the Police will be vested with powers to superintend generally the proceedings of the headmen so appointed, and to afford such assistance as may be required of them, the goraeths and chowkeedars being responsible to the headmen of their respective villages for the due discharge of their duties, as far as the proposed enactment is concerned.

Headmen.

8. In other districts the village headmen, known by different names in different places, are paid by land or otherwise compensated for the performance of such public duties as are required of them, but no such arrangements appear to exist in this district; it is therefore necessary that, if they be vested with any responsibility, they should be compensated for their trouble.

9. A moderate charge on the infected cattle impounded in the Government Pounds will be an addition to the pound fund, from which the necessary expenses may be defrayed.

LOHARDUGGA.
H. L. Oliphant, Esq.

From H. L. OLIPHANT, Esq., *Deputy Commissioner of Lohardugga, to the Commissioner of Chota Nagpore,*—(*No.* 318, *dated* 19*th February* 1870).

With reference to your memorandum No. 3110 of the 5th November last, forwarding copy of Government letter No. 2122 of the 9th October, with enclosures, relative to the introduction of an Act for the prevention of the spread of disease among cattle, I have the honor to reply.

2. In accordance with the suggestion contained in the Government letter, my predecessor invited an expression of opinion on the subject from Mr. H. Stainforth and Mr. Hume Smith, the managers of the Chota Nagpore estate, but neither of these gentlemen appear to have taken the question of the expediency of legislation, or otherwise, into their consideration. Mr. Stainforth says:—"If there be legislation in respect to it, every effort should be made

Co-operation of the people.

to obtain the concurrence and co-operation of the people, and the Police should have nothing to do with it, otherwise the remedy is likely to be much worse than the disease." He then goes on to say:—"I do not think that any one here knows much about the disease. Before I came up here, Dr. Brougham told me as a reason why, in his opinion, a cattle farm would not answer here was, that numbers of cattle died of small-pox which they caught from the people. If the present be no new disease, and the cattle catch it in the way mentioned, then the labors of the vaccination officers must tend to diminish the mortality among cattle."

3. Considering the large number of cattle that there are in this district, especially in Palamow, where they are brought in large numbers from the neighbouring districts of Gya and Shahabad for the purpose of grazing, I cannot but think that it would prove very beneficila

LOHARDUGGA.
H. L. Oliphant, Esq.

if some legislative enactment for the prevention of the spread of cattle disease was brought into force; but the great difficulty in carrying out the provisions of such an enactment in this district would lie in the enormous tract of country which we have to deal with, as well as in the utter ignorance of the people of the district regarding all diseases appertaining to cattle. Difficulties.

4. If the people themselves are not aware, as I am sure the majority of them are not, what the first symptoms of the infection in contagious diseases are, it is impossible that they can give notice to any one in authority in time to prevent considerable mortality; it is only on discovering that many of their cattle are sick or dying, that it begins to strike them that some infectious disease is prevalent, and they then attempt to allay it. Early notice.

5. Under these circumstances, it would be necessary, in order to have the provisions of the Act properly carried out, to have a large staff of Inspectors or Overseers acquainted with the ordinary kinds of cattle disease, who could move about through the district and inspect the cattle in different villages. The Police might, no doubt, render valuable assistance to these officers, but it is out of the question to suppose that, with every Police Station comprising an average area of 285 square miles, the Police alone could perform such duties. Even if the extent of jurisdiction of the several stations was not so great, the Police have not the necessary knowledge, nor, in my opinion, would it be expedient to employ them. Inspectors. Police.

6. It would be necessary also, I imagine, to establish in different parts of the district some sort of hospital pounds, where the cattle could be taken to on its being first discovered that they were infected with the disease, and if the law is to work properly, a large number of such pounds would be requisite in a district of such an extent as this. Hospital Pounds.

7. A statement is appended showing the receipts and disbursements of the several cattle pounds in the district during the year 1868-69. The profits derived from this fund might no doubt be employed in partly providing for the expenditure incurred in the working of such an Act; but if no other money beside this, and the amount of fines realized under the Act, can be made available, I am afraid that in such a district as this the Act could never be worked successfully. Funds.

8. I beg to enclose herewith a copy of a report (No. 57 of the 7th instant) which I have received from the Assistant Commissioner of Palamow on this subject for your information. The subject of the 10th and 11th paragraphs of his letter will be brought to the notice of the Police, and with regard to the three concluding paragraphs, it appears to me that both Mr. Forbes as well as his informant must be mistaken. In the first place, it is utterly impossible that *vaccine* matter could ever, under any circumstances, communicate small-pox; Mr. Forbes must therefore, I presume, mean *small-pox* matter; but even if small-pox matter be put into the wells, it could hardly be in such quantities as to infect a whole well of water; and even then, it is difficult to suppose that infection could be conveyed in this way to people through their stomachs. Snake poison, I am told, swallowed into the stomach is found to be quite inert, and it would no doubt be the same with other animal poisons whose usual mode of entrance is not by the stomach. But putting all this aside, I cannot see why inoculation should resort to any such measures to spread the disease, when it can in all probability be just as well done by inoculating any person in a village. Question of infection of wells.

Statement showing Receipts, Disbursements, and Balance on account of Pound Funds in the District of Lohardugga during the year 1868-69.

District.	Receipts in 1868-69.	Disbursements in 1868-69.	Balance.	Remarks.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Lohardugga	1,486 0 6	662 0 0	824 0 6	

PALAMOW.
L. R. Forbes, Esq.

From L. R. FORBES, Esq., *Extra Assistant Commissioner of Palamow, to the Deputy Commissioner of Lohardugga,—(No. 57, dated 7th February* 1870).

I have the honor to submit the following report with reference to your office No. 1644 of the 12th November 1869, and enclosures. Quarantine.

2. After a careful consideration of the measures proposed for the prevention of cattle disease, I am of opinion that the only means whereby we can hope to check a cattle epidemic at all is by quarantine laws strictly enforced, and by compelling the destruction of diseased hides and the burial of carcasses. Disposal of carcasses.

PALAMOW.
L. R. Forbes, Esq.
Difficulties.

3. In a country like Palamow, an immense jungle tract in which the number of cattle is almost out of proportion to the extent of the population, and where the cattle are herded in remote jungle tracts, it becomes a matter of great difficulty to deal with disease where an epidemic makes its appearance.

Apathy of people.

4. One of the greatest difficulties to be contended with is doubtless the obstinate apathy of the people, and their utter callousness on such occasions as these, and the only hope there is of inducing the people to see their own interests is by vigorous legislation.

Headman.

5. The powers it is proposed to give village headmen is doubtless a wise measure, likely to be attended with satisfactory results. The headman would, however, I imagine, report only when cattle other than his own are affected. In cases where he is an "Aheer," owning large herds of cattle, he would probably be silent; I would therefore go somewhat further than

Informers.

the draft Act contemplates, by the offer of rewards to informers, to be paid from the fines and penalties exacted under the law.

Local difficulties.

6. The difficulties attending the success of the proposed enactment in a jungly mehal such as Palamow are these:—

Immense herds.

(1).—The immense number of cattle spread in herds of every extent over an immense tract of wild jungle country where disease might be rife without the fact coming to light.

(2).—That the trade of nearly the whole of the south-western frontier is carried on by means of pack bullocks, which traverse the country in all directions, over paths leading through

Pack bullocks and cattle movements.

jungle tracts where the cattle are herded for grazing. When these pack bullocks pass through infected herds, they must, I imagine, carry the seeds of disease with them wherever they go, particularly as the traders almost invariably encamp in the same spots, and it follows that wherever one trader encamps whose cattle are infected, each successive party encamping on the same grounds runs the risk of infection. There are numerous other difficulties in the way, but the above are the principal.

Teaching the people.

7. As regards the teaching of the people some of the simplest methods of dealing with the most general forms of cattle disease, this is merely a question of time. During the five and a half years I have been in the sub-district, I have acquired considerable influence over the people, and have every hope of being able to carry them with me in a measure of this kind.

Farriers.

8. I doubt whether any persons would consent to leave the country for the purpose of training themselves as cattle farriers; but were an intelligent and trained farrier posted here, I see no difficulty in the way of getting up a considerable school of men anxious and willing to learn.

Pound fund.

9. As will be seen from the accompanying statement, showing the working of the pound fund during the past three years, the income is out of proportion to the expenditure, so much so that I am about to propose an increase to the pay of the Pound-keepers, Rs. 4 a month not being sufficient for a man able to read and write, and from whom a security of Rs. 50 is exacted. It is fruitless to hope that such a man, having opportunities of being otherwise, would remain honest.

Cattle poisoning.

10. Before closing this report, I must mention certain information that I have received within the last two days of the existence to a very large extent of cattle poisoning both in this district and Behar. My informants, Baboo Ram Surrun Lall, Tehsildar of Mr. Charles Davies, of Rhotass, and Baboo Doorgabux Singh, of Mamaodag, in Palamow, both assure me that such is the case, and have specified several instances in which their own cattle have been so dealt with.

11. From the latter gentleman I learnt that fear of the cattle poisoners, who are principally Chamars and Bhoonias, is the cause of the silence of the cattle owners; but he has now promised me to take the matter up vigorously, and, if possible, to bring some of the offenders to justice.

Practice of inoculators.

12. Baboo Doorgabux Singh has also given me the startling information that there is also a horrible system carried on by inoculators who came into Palamow from other districts, principally Tirhoot, by which small-pox is disseminated among the people.

13. He tells me that this is done by poisoning the wells with the vaccine matter, the object being of course their own profit. Whether the information regarding cattle poisoning or the spreading of small-pox is true, I cannot vouch. I would add, however, that I have every confidence in my informants, particularly the latter, who is the head of the most ancient and respectable Rajpoot family in the pergunnah, and who, I feel sure, would not attempt to impose upon me with idle tales; and I would further add that he has promised to interest himself in the matter, and to render me every assistance in his power.

14. Whether the above information is groundless or not, it is of so startling a nature that it is absolutely necessary that immediate measures be undertaken to ascertain its truth; and since my present duties are so engrossing as to render it a matter of great difficulty for me to take the subject up with the vigour it requires, I would earnestly urge you to recommend that a special officer be appointed to make a thorough and searching enquiry. In the meantime I shall do my utmost to gather further information on the subject, and have requested the Assistant Superintendent of Police to institute immediate enquiries.

From A. LL. CLAY, Esq., *Officiating Deputy Commissioner of Maunbhoom, to the Commissioner of Chota Nagpore,—(No. 552, dated 24th March* 1870). MAUNBHOOM. A. Ll. Clay, Esq.

With reference to your office memorandum No. 3110, dated 5th November 1869, forwarding letter No. 2122, dated 9th October 1869, from Officiating Junior Secretary to the Government of Bengal, to your address, with enclosures, and subsequent reminder received yesterday, I have the honor to report.

2. After taking the opinion of such gentlemen, official and non-official, as I have been able to consult, I am of opinion that if special legislation is considered necessary at all, the form of the Madras Act II of 1866, with some modifications, would be as suitable to this district as any other. Madras Act approved.

3. The hospital pounds should be established at short distances from each other, say one for each village or cluster of villages, so as to be easily accessible to owners of cattle, and avoid the risk of spreading the contagion by taking diseased animals long distances across country. Such pounds might be erected at once, and always kept up, so as to be immediately available on the outbreak of disease. A mere shed with an enclosure would be sufficient, and would cost a few rupees only. If the number of sick animals increased so as to exceed the accommodation, more sheds might be added. I think it would be desirable to have the hospital pounds permanently established, as in this district at least the disease generally shows itself in a sporadic form, and is always flying about the country. Moreover, the hospital pound would thus gradually familiarise itself to the people and become a recognised institution. The expense of construction might, I think, be fairly recovered from the zemindars or the residents of each village within the circle of the pound, through their headman, otherwise the first outlay will fall somewhat heavily upon the pound fund. Hospital Pounds. Should be permanent.

4. The hospital pounds being provided, the next thing would be to get pound-keepers. The duties of a pound-keeper under the Madras Act (section 5, &c.,) could not be properly performed without some slight knowledge of farriery, at least with regard to this particular disease. It would therefore be necessary to have trained men available for the work. The powers which the Act confers upon pound-keepers are, moreover, liable to great abuse, and it would be of the last importance to employ respectable men and give them a fair salary. The civil medical officer makes what I consider a very good suggestion, *viz.*, that one or more trained native cattle doctors should be permanently attached to every district, and always at the disposal of the district officer. These men might either be allowed to support themselves by private practice, Government paying them a fixed retaining salary, or they might be appointed as ordinary pound-keepers at sudder stations and sub-divisions, whence they could be deputed to the interior on the outbreak of an epizootic, their duties being performed by substitutes during their absence. Pound-keepers. Trained men. Cattle doctors.

5. The provisions of section 10 of the Madras Act are not, I think, applicable to this part of the country, where the slaughter of a cow or ox is looked upon as an atrocity, and if enforced would, I am convinced, make the new law most unpopular; moreover, if people knew that their cattle might be ordered to be destroyed, they would run any risk sooner than report outbreaks of the disease. Slaughter condemned.

6. It would be difficult, if not impossible, to enforce section 12 of the Madras Act; and I see no object in enacting what is almost sure to remain a dead letter. The provisions of the section might indeed be perverted to suit the ends of an unscrupulous pound-keeper, and I think it would be better to omit it altogether from the Bengal enactment. It would be quite sufficient for the district officer, on hearing of an outbreak of the disease in any village, to send a warning to the headmen of neighbouring villages not to let their cattle have communication with those of the infected locality. Section 12.

7. The provisions of the Madras Act regarding penalties for withholding information, for disobeying directions, opposing seizure, &c., are, I think, all good. I would extend the penalty for not reporting to the headman and chowkeedar of the village, as well as the owner or keeper of cattle. In this district the keeper of the village cattle is often a mere boy, who could scarcely be held responsible. Penalties. Early report.

8. I would also hold the headman or chowkeedar responsible for superintending and enforcing such preventive and remedial measures as could be taken pending the arrival of the cattle doctor. Resistance to his authority in this matter should be punishable in the same way as disobedience to the directions of the said doctor. The headman's reports should be made through the nearest Police Station; and in cases where immediate action was necessary, the officer in charge should be empowered to assist and co-operate with him. Immediate action.

9. Other matters of detail might be arranged by rules laid down by the Local Government, and do not seem to call for special legislation.

10. My report has been delayed in the hope of hearing from other gentlemen who have not yet replied to my communications. The reminder received yesterday being urgent, I am compelled to despatch this at once.

PATNA.

PATNA DIVISION.

R. P. Jenkins, Esq. *From* R. P. JENKINS, Esq., *Commissioner of Patna, to the Secretary to the Government of Bengal, Judicial Department,*—(*No.* 184, *dated* 21*st May* 1870).

I have the honor to acknowledge the receipt of Government orders No. 2122 of the 9th October last, forwarding a copy of Act II of 1866, passed by the Government of Madras with a view to prevent the spread of cattle disease. The letter also encloses the draft of an Act submitted by the Agri-Horticultural Society. An expression of my opinion is now called for—1*stly*, as to the form which any similar legislative enactment should take for Bengal; 2*ndly*, as to the machinery by which it could best be worked; and 3*rdly*, as to the source from which funds could most easily be provided.

2. In reply, I beg to subjoin an abstract of the views expressed on the subject by the several district officers whom I have consulted.

3. *Chumparun.*—The Magistrate of Chumparun, after communicating with the leading non-official European gentlemen in his district, states, that inasmuch as the whole traffic of the country is carried on by cattle either laden or drawing carts, the proclamation of an affected district will have a tendency to interfere with the whole traffic of a district, and may affect very seriously the price of food. He thinks that without European supervision the segregation of cattle will never be successfully carried out, and that village officers will never really prevent the skinning of deceased carcasses, or see to their immediate burial. That the prejudices of the people are so strong against the destruction of even a diseased animal, that there will be a general disinclination to report cases, for fear that the doing so will cause cattle to be slaughtered. Native farriers, if called in, Mr. Metcalfe thinks, will assuredly demand fees, and thus render the people wholly averse to employing their aid.

Proclamation.
Difficulties.
Segregation.
Burial.
Difficulties.

4. *Gya.*—The Magistrate of Gya suggests—

Madras Act approved. 1*st.*—The adoption of the Madras Act as the basis of any proposed enactment.

Special agency. 2*nd.*—The adoption of a special agency in order to secure anything like success.

Cow-doctors. 3*rd.*—As to trained native farriers, Mr. Palmer thinks that a staff of intelligent *goallahs*, who possess a fair knowledge of "cow-doctoring," and who would command the confidence of the people, would be more useful.

Pound fund. 4*th.*—The surplus income of the pound fund might with propriety be utilized in this business. The municipalities might also be required to defray the expenses of arrangements to be made in consequence of disease occurring within their respective boundaries.

The Magistrate is of opinion that any detailed legislative enactment will not meet the evil, and thinks a short Act advisable, empowering Commissioners of Divisions to adopt such measures as the extent of the evil in their respective divisions may seem to call for. He says that prompt measures are absolutely necessary; and as the Commissioner would get immediate information and suggestions from the district officers and other local sources, he would be in the best position to adopt, without loss of time, such executive measures as were considered necessary. No assistance can be expected, he says, from the Hindoo community; no Hindoo will voluntarily slaughter his own cow, however ill, diseased, or useless it may be. Hide trade has a great deal to do with the loss of cattle in the Gya district, and the Magistrate suggests that the burning of carcasses of cattle dying suddenly should be insisted on by law.

Prompt action necessary.
Apathy of people.
Burning.

Madras Act preferred. 5. *Patna.*—Mr. Bayley, Magistrate of Patna, prefers the provisions of the Madras Act to those of the draft submitted by the Agri-Horticultural Society, as they utilize the existing institutions and are not dependent on the village headman, a personage who for all practical purposes is in a majority of villages absolutely non-existent and mythical. He approves of the plan of hospital pounds in the vicinity of large cattle marts, and temporarily at all large cattle fairs, such as Sonepore, Berhampore, and elsewhere. On the outbreak of any general cattle disease, such as would call for the proclamation of the infected district, he proposes the establishment of hospital pounds at every Police Station, and, failing better agency, he would place such pounds under the charge of the head officer of the Police Station, for whose guidance simple instructions might be drawn up by Mr. Farrell. At the same time there should be an inspecting agency appointed on the occasion of an outbreak of disease, who would act both as a guide to and a check over the Police. The expenditure should be met from the surplus income of the pound fund, and from fines and forfeitures under the proposed law. Mr. Bayley also suggests that the Madras Act may be much improved by specific directions for the destruction of diseased cattle and hides, &c., and also by the increase of the penalty imposed by section 13. In this view I quite agree. It is certain that a large majority of cattle owners would far rather take their chance of having to pay Rs. 5 than undergo the trouble, and probable loss and expense, of giving such information as would cause their cattle to be sent to the hospital pound. Both the owner and the person in charge should be liable to punishment for failing to give information. Mr. Kelly, a non-official resident, who was

Headman.
Hospital Pounds, under Police.
Inspection.
Pound fund.
Penalties.

consulted on the subject by Mr. Bayley, strongly recommends the formation of a special agency consisting of veterinary surgeons or trained native assistants, who should travel about the infected districts and administer medicines and advice when necessary. It will be useless, he says, to look for any help from the village headman or chowkeedars, who are as ignorant of disease as other villagers. PATNA. R. P. Jenkins, Esq. Special agency.

6. *Sarun.*—The Magistrate of Sarun makes the following remarks:—

1*st.*—It is impossible to insist on the cremation of all diseased carcasses. The ryots will be unable to supply the fuel to carry this out. He recommends deep burial instead, which will cost nothing to the ryot but the labor of digging. He objects to the prohibition of skinning of all carcasses not killed for food, except, perhaps, in infected and proclaimed districts. Such a prohibition will, he considers, ruin the chamar class. The immediate destruction, he thinks, of all diseased cattle is no doubt an effectual remedy so far as regards particular localities, but it is not a remedy which it is desirable to enforce on account of its insufficiency really to stop the disease. Cremation. Objection. Burial approved. Skinning should not be prohibited. Slaughter not desirable.

The prohibition of all cattle fairs within infected localities should be provided for, and provision should be made for the grant of compensation to owners whose cattle may be destroyed under the Act. Prohibition of fairs. Compensation.

A Magistrate should, he says, be empowered to imprison at once any person violating the law on his refusing to pay fine, and not to be compelled to attempt the realization of fine by distraint. Penalties.

Mr. Garrett objects to the law being enforced through the headman of the village; his proposal is, that in every Police Station (not out-station) a Cattle Inspector on Rs. 25 per month be appointed, to whom the village chowkeedar should be bound to give information of the outbreak of the disease. The proprietors or their local agents should be likewise held responsible for reporting the outbreak of diseases in their villages, and any person in whose herd the disease shows itself should be held personally liable to punishment if he fails to communicate the facts at once either to the village chowkeedar or the nearest Police Station, or to the Veterinary Inspector, who should visit the village where the disease is reported to have made its appearance, and instruct the ryots how to treat the diseased cattle, and segregate them from the healthy. Headman. Inspectors. Early report.

Mr. Garrett further proposes the establishment of hospital pounds at every Police Station. These hospitals should be in charge of the resident Police, the diseased beasts being driven to them by by-ways, and not through villages or frequented thoroughfares. For the purposes of segregation, he says, places must be selected by Government. Left to themselves, the ryots will never enforce segregation. Hospital Pounds. Segregation.

The expenditure involved in the measures suggested by him should be met from the local pound funds. The owners should also be called upon to pay the cost of medicines and of feeding, &c., in the event of their cattle being cured. Pound funds.

7. *Shahabad.*—The Magistrate of Shahabad is opposed to the introduction of the Madras Act, on the ground that it places too much power in the hands of pound-keepers, and gives preference to the provisions of the draft Act submitted by the Agri-Horticultural Society, which, he thinks, is better adapted to Bengal. He objects strongly to entrusting too much power to the subordinate officers and headmen of villages, who are sure to turn the law into an engine of oppression. The pound-keepers, Mr. Alexander says, to be entrusted with carrying out the provisions of the law, should be a better class of men than they now are, and should possess a practical knowledge of the diseases to which cattle are liable, and their treatment. Draft Act preferred. Headmen. Trained men.

In regard to the source from which funds could be provided, the Magistrate thinks that the surplus income of the pound fund will not meet the expenses. He suggests that as cattle disease would not, in all probability, be rife at one and the same time in every district in the division, and perhaps some districts might escape altogether, one general fund could be maintained for the use of the whole division. Pound fund insufficient.

8. *Tirhoot.*—The Magistrate of Tirhoot, on the other hand, thinks that the Madras Act is more applicable to his district than the provisions of the draft Act proposed by the Agri-Horticultural Society. He says that the Village Police must be placed on a proper footing if the duty of carrying out the provisions of the Act be made over to them. In Mr. Halliday's opinion there will be great difficulty in carrying out any rules directing the slaughter of diseased cattle and the cremation of the carcasses, owing to the prejudices of the Hindoos. He thinks, therefore, that much good will be done by a law enforcing the segregation of diseased cattle and in preventing traffic in hides in villages where the disease prevailed. What is most wanted, however, is a better machinery for carrying out the provisions of the law than at present exists. The savings of the pound fund, he says, will amply meet what expenditure may be needed in carrying out measures of relief. Madras Act preferred. Village Police. Slaughter and cremation. Segregation. Hide trade. Pound fund.

PATNA.
R. P. Jenkins, Esq.

9. The following statement shows the receipts, disbursements, and balance of the pound funds of the several districts for 1868-69 :—

DISTRICTS.	Receipts.	Disbursements.	Balance.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Chumparun	1,746 11 6	862 2 1	884 9 5
Gya	3,286 8 9	1,297 1 0	1,889 7 9
Patna	2,741 14 3	1,716 8 6	1,025 5 9
Sarun	2,690 12 0	770 9 0	1,920 3 0
Shahabad	1,914 8 0	1,387 0 6	527 0 6
Tirhoot	4,612 1 4	1,121 0 2	3,491 1 2
TOTAL ...	16,992 7 10	7,254 5 3	9,738 2 7

Commissioner's opinion.
Legislation necessary and trained agency.
Pound-keepers.

10. I am myself of opinion that legislation is certainly necessary, but at the same time the establishment proposed by the Bengal Government in their letter No. 808 of 21st June is undoubtedly as necessary. Some such trained persons, with veterinary skill, will be required for deputation to the localities where outbreaks of murrain occur. The people appointed as hospital pound-keepers must be to some degree scientific men, for it will require some little professional knowledge to discern whether cattle brought to the hospital pounds, or herds reported to have disease amongst them in the interior, and which have to be inspected by the pound-keeper, are or are not suffering from the epidemic, the progress of which it is the intention of the law to check.

Madras Act approved.

11. The Madras Act seems to me a very simple and proper one. No doubt it throws much responsibility, and almost dangerous power, into the hands of keepers of hospital pounds, but then the honest conduct of these men is to a certain extent guaranteed by the provision of section 16 of that Act, and, on the whole, I am in favor of our law for Bengal being drawn up on the basis of that Act rather than on that of the draft furnished by the Agri-Horticultural Society.

Difficulties from prejudices and interests.

12. Personally, I have serious misgivings that legislation even will be found of much avail. No Hindoo, although threatened by pains and penalties, will report disease amongst his cattle, from the simple dread that he may be the means by so doing of having them slaughtered, an act of unholiness in which his prejudices and religious scruples forbid his taking any part. The Mahomedans are only to a small extent cattle owners, whilst they are for the most part the traders in hides. It is obviously against their interests, therefore, to report that cattle are suffering from an epidemic from which, if they die or are destroyed by order, their skins are no longer available for the market, but are burnt or buried, and thus lost to trade. For similar reasons, the chamars, a very large class who derive a direct profit from the hides, hoofs, and horns, are not likely to assist in depriving themselves of the booty they have been counting on as their own when they have found a fatal disease prevalent amongst the herds in their neighbourhood.

Speedy legislation approved.

13. Notwithstanding, however, my own impressions that the law, unaided as it will be by public feeling, and indeed directly opposed by it, may be less effective than it would be in other countries, I am strongly in favor of speedy legislation, the necessity of which is so fully urged in the Bengal Government's letter No. 2119 of 9th October last.

Skilled agency funds.

14. The machinery by which the Act is to be worked should be a skilled agency, and the funds by which this agency should be maintained should be the present pound fund augmented by the addition of all fines levied under the proposed Act.

Penalties.

15. The penalties in section 13 of the Madras Act are ridiculously light. The fine should be increased to Rs. 50, so that the rich may not prefer paying a small fine to acting up to the provisions of a law enacted expressly for the benefit of their ryots and of themselves.

BHAUGULPORE.

BHAUGULPORE DIVISION.

J. W. Dalrymple, Esq.

From J. W. DALRYMPLE, Esq., *Commissioner of the Bhaugulpore Division, to the Secretary to the Government of Bengal, in the Judicial Department,*—(*No.* 115, *dated* 28*th April* 1870).

I have the honor to acknowledge the receipt of Mr. Mackenzie's letter No. 2122* of the 9th October last, and its enclosures, and in reply to state as follows.

* Judicial Department, Medical.

BHAUGULPORE. J. W. Dalrymple, Esq.

2. After consulting the district officers employed in this division, I cannot do better than to forward a copy of the very careful report made by Mr. Stewart, the Deputy Magistrate in charge of Rajmehal, in whose views I entirely concur.

3. I beg to submit a statement showing the receipts, disbursements, and balance of the pound fund for the year 1868-69.

From E. STEWART, Esq., *Deputy Magistrate and Deputy Collector, in charge Rajmehal, to the Commissioner, Sonthal Pergunnahs, Bhaugulpore,*—(*No.* 2182, *dated* 1*st December* 1869).

RAJMEHAL. E. Stewart, Esq.

I have the honor to submit the report called for in your memorandum No. 329, dated the 6th instant. I regret that it has been delayed owing to non-receipt of replies from the zemindars who were addressed on the subject, and to the delay in my getting a copy of the Madras Act.

Segregation practised imperfectly.

2. From the replies received from the zemindars, it appears that the people themselves are alive to the necessity of the segregation of infected animals, and put it in practice to some extent on the appearance of infection among their cattle. It is of course imperfectly carried out, and without the aid of specific legislation, I do not think any effectual sanitary measures will ever be adopted.

Madras Act generally approved.

3. After duly considering the subject, I think the Madras Act II of 1866, with a few modifications and alterations, would be the best form which legislation could take on the subject. These modifications I now proceed to detail.

Definition of diseases.

4. The Madras Act, I see, contains no definition of what diseases shall be considered as contagious and infectious. It appears to me to be very necessary that the law should contain such a definition. By section 6 of the law it is left to the hospital pound-keepers to decide whether any animal is attacked with an infectious or contagious disease. These men being entirely unskilled in the veterinary art, and in point of fact having less experience in these matters than the village cow-doctors, will be very apt to go wrong; and as the class they belong to is not above the reach of temptation, they will make use of their power to extort money by pronouncing an animal infected when it is really not so. Section 16 of the law provides a remedy against the actual wrongful seizure of an animal, but not against an abuse of the power given by section 6. This abuse may, I think, be obviated by a definition of what diseases should be considered contagious and infectious, and by making the pound-keeper responsible for any illegal exercise of his power.

Inspection of premises.

5. In section 7 I also observed that no punishment has been provided against any resistance which might be made to a pound-keeper wishing to inspect any premises for diseased animals. I think some provision on this point ought to be made.

Slaughter.

6. The same observation applies to section 10. I am not aware what may be the case in Madras, but in many parts of Bengal and Behar (I may instance that part of Bhaugulpore included in the Mudhepoora sub-division) the people have very strong religious objections to the destruction of cows under any circumstances, and, apart from these religious scruples, no Hindoo owner of a cow will like to see his animal destroyed while there is life in it and a chance of its recovery. I think, therefore, that attempts on the part of pound-keepers to carry out the provisions of this section are likely in some places to meet with resistance, and this should be provided against. Moreover, I do not think any Hindoo pound-keeper would like to have the carrying out of this provision of the law, so that it would be necessary to employ Mahomedans, or those whose caste will not stand in the way of the performance of the duty. The mode of destruction should also be laid down. In this section the skinning of any animal so destroyed prior to burial should also be expressly prohibited.

Skinning.

Clauses of draft Act approved.

7. It also appears to me necessary that some of the suggestions contained in the letter from the Secretary of the Agricultural and Horticultural Society should be adopted. I allude to sections IV, V, and VI of the draft Act submitted by him. These, with certain necessary modifications, might, I think, be usefully inserted in any law which may be enacted.

Cordon.

8. I also think that when any contagious or infectious disorder is known to prevail to any very serious extent in any district or tract of country, a cordon should be drawn round it, and all importations and exportations of cattle to and from such tract prohibited under severe penalties. Any trade in hides or horns or other parts of cattle between the tracts within and those outside of the limits so circumscribed should also be put a stop to during the prevalence of the disorder.

Trade in horns and hides.

Pound-keepers instructed.

Munduls.

9. In regard to the machinery by which the law could best be worked, I think the pound-keepers employed at present under Act III of 1857 might be entrusted with the duties, but care should be taken that they receive some previous instructions in the treatment of diseased cattle. Long experience has, I think, shown the people themselves what diseases are infectious, and the village munduls in this district, who are generally men of long standing, will, in most cases, be able to inform the pound-keeper when any such disease makes its appearance. For this purpose a provision ought to be introduced into section 4 of the law making

RAJMEHAL.
E. Stewart, Esq.
Immediate report.
Machinery of cordon.

the mundul and chowkeedars, as well as the owners and custodians, responsible for the immediate report of all cases of the outbreak of any infectious disease. In those cases, however, in which the disease breaks out in a virulent form in any village at a distance from the pound, it may be necessary to entertain the services of a special hospital pound-keeper. When a cordon is drawn round any tract of country, the headmen and chowkeedars of all the villages on the limits and within them should be made responsible for preventing the importation and exportation of cattle, and should be entrusted with authority to prohibit it, and to apply at once to the Magistrate for assistance if they find their authority disregarded. I do not think any increased allowance to the pound-keepers for the performance of these additional duties would be necessary.

Funds.
Pound fund.

10. In regard to the source from which the funds could be most easily provided, I think the pound fund balances would furnish sufficient money to pay the expenses during any ordinary outbreak of disease. The statements herewith submitted show that the balances at credit of the fund in this district are in round numbers Rs. 3,000. If the present pound-keepers are employed in the hospital pounds, it will not be necessary to pay them any increased allowances, and the money, I think, would be sufficient for the erection of hospital pounds and for the payment of the salaries of any men who may be employed to assist the pound-keepers, and also for the medicines used, if these are not of a very expensive description.

Statement showing the Receipts, Disbursements, and Balance of the Pound Fund under Act III of 1857 *during the year* 1868-69.

DISTRICTS.	Receipts.	Disbursements.	Balance.	REMARKS.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Bhaugulpore	7,263 7 4	2,213 5 7	5,050 1 9	
Monghyr	3,919 0 9	1,097 10 2	2,821 6 7	
Purneah	13,840 2 4	4,228 8 10	9,611 9 6	
TOTAL ...	25,022 10 5	7,539 8 7	17,483 1 10	
Rajmehal	3,050 14 10	659 0 0	2,391 14 10	
Doomka	352 7 3	252 0 0	100 7 3	
Godda	366 7 0	72 0 0	294 7 0	
Deoghur	0 0 0	0 0 0	0 0 0	
TOTAL ...	3,769 13 1	983 0 0	2,786 12 1	
GRAND TOTAL ...	28,792 7 6	8,522 8 7	20,269 13 11	

RAJSHAHYE.

RAJSHAHYE DIVISION.

C. E. Lance, Esq.

From C. E LANCE, Esq., *Officiating Commissioner of the Rajshahye Division, to the Secretary to the Government of Bengal,—(No.* 40, *dated 3rd February* 1870*).*

In reply to your letter No. 2122, dated the 9th October last, with enclosures, I have the honor to report as follows, premising that my report has been delayed in consequence of no reply having been received from the Magistrate of Maldah until the 31st ultimo.

2. I regret to observe that no landholder has assisted any Magistrate in this division with his opinion. In Maldah Mr. J. J. Gray and in Bogra Mr. Ridge have given their opinions, the former being rather against legislation on the subject of cattle disease, the latter advocating it and agreeing generally in the measures proposed.

3. The Magistrate of Maldah has entered fully into the subject; I therefore enclose a copy of his report; the letters from the other Magistrates do not contain any important suggestions.

Legislation necessary.

4. That legislative action to prevent the spread of cattle disease in Bengal is absolutely necessary may readily be allowed. The only question is as to the form it should assume.

Draft Bill.

The draft Bill submitted by the Secretary to the Agricultural and Horticultural Society aims principally at stopping the spread of disease by preventing the removal of infected cattle from one spot to another, and also by insisting upon their segregation.

Madras Act.

5. The Madras Act II of 1866, whilst also providing for the segregation of diseased cattle, aims chiefly at securing their treatment in pound hospitals. I think the law for Bengal should embody both these provisions, and as they seem to me to be separate and distinct, they might be placed in separate parts of the same Act. Thus Part I would contain the first eight

Fusion of both proposed.

clauses of the Bill proposed by the Agricultural and Horticultural Society; Part II would then contain the provisions of the Madras Act. To this should be added a clause, to the effect that all cases under the Act should be tried by a Magistrate under the Criminal Procedure Code in

Indemnifying clause.

force at the time, and also an indemnifying clause something in the form of the last clause of

RAJSHAHYE.
C. E. Lance, Esq.

the Bill. This would be very necessary, as it is probable there would be many prosecutions and civil suits for acts done under the provisions of the law.

General and emergency provisions.

6. If the Act were thus divided, I see no reason why Part I should not be generally applicable to all Bengal. Part II might be extended to such districts only as happened to be affected in a great degree with the contagious disease in question.

Qualified men and funds.

7. The chief difficulty in carrying out Part II, or the Madras Act, would be in finding men qualified to act as hospital pound-keepers and in obtaining the necessary funds.

Veterinary School.

8. At present veterinary knowledge is not to be found in any village in Bengal, as far as I am aware; and therefore a school of some sort must be formed. The most feasible plan for imparting this knowledge seems to be that proposed to the Government of India in the letter noted in the margin. Ten or fifteen native farriers might thus be properly educated every year; and with the certainty of Government employment, I should think there would be no difficulty in obtaining young men willing to take up the profession. Without men of some professional education it will be impossible to carry out the pound hospital system, and the present pound-keepers have no education of the nature that would qualify them to act as farriers.

From the Hon'ble A. Eden, Secretary to the Government of Bengal, No. 808, dated the 21st June 1869.

Farriers.

Funds.

Pound funds.

9. The expenses both of educating men in veterinary science and in carrying out the provisions of the Act should be met from the surplus proceeds of the Cattle Pound Funds. That surplus is large; it probably would be ample for the purpose, and certainly there can be no more legitimate objects on which to expend it than these.

Pound fees might be raised.

10. But in case it should not be sufficient, I see no reason why the fees leviable under Act III of 1857 should not be raised, and on this point I beg to quote the following opinion from the Magistrate of Moorshedabad contained in his report on the whole subject:—

"I have long been of opinion that the scale of fees for impounded cattle is very much too low. I would therefore double or even treble the existing rates, and, wherever possible, increase the number of pounds. I feel certain that this measure would be hailed with delight by the agricultural class at large, and the only class that would suffer would be the class which now profits by the present low rates, namely, the goallas."

With this opinion I quite agree, and I would even advocate the raising of the fees on general grounds, independent of those connected with the subject under discussion.

Agency.

Headmen.

Punchayets.

11. The provisions of the Agricultural and Horticultural Society's Bill, which I have recommended to be placed in Part I of the Act, could be worked through the Police and the village chowkeedars. There are no village headmen in Bengal recognized by the authorities as such, and therefore no responsibility can be attached to such persons. If the new Chowkeedary Act is passed, the system of punchayets, which will thereby be introduced, would assist us in obtaining the necessary information; but in the meantime the agency of the Police and the chowkeedars would be sufficient to enable us to make a commencement of working the law. As the agency increased in efficiency, the law could be worked more thoroughly.

Gradual introduction of law.

12. It is probable also, for other reasons, that the law could not at first be carried out with any great strictness, for some of its provisions would, no doubt, at first sight, militate against the religious feelings of the Hindoo community. I allude to the sections authorizing the slaughter of diseased cattle.

Difficulties would gradually yield.

13. Mr. Lowis, the Collector of Maldah, has laid great stress on this difficulty in bringing the law into force, but to my mind he has exaggerated it. The Hindoo community would soon perceive the object of the law, and understand that its aim was not to kill, but to preserve cattle; and that therefore its stringent provisions, instead of opposing religious obligations, rather assisted them.

14. The Magistrates of Moorshedabad, Pubna, Maldah, and Rajshahye have not submitted the statement required by your last paragraph. They have been called on to submit it without delay, and it shall be forwarded as soon as received. The statements received from the Magistrates of Dinagepore, Rungpore, and Bogra are herewith sent.

Statement showing the Receipts, Disbursements, and Balance of the Pound Fund for the Districts of Bogra, Rungpore, and Dinagepore for the year 1868-69.

DISTRICTS.	Receipts.	Disbursements.	Balance.	REMARKS.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Bogra	3,107 3 0	1,282 12 3	2,124 6 9	
Dinagepore	3,467 11 0	1,868 13 6	1,598 13 6	
Rungpore	2,143 12 0	873 0 6	1,270 11 6	
TOTAL ...	9,018 10 0	4,024 10 3	4,993 15 3	

MALDAH.
E. E. Lowis, Esq.

From E. E. LOWIS, Esq., *Magistrate of Maldah, to the Commissioner of the Rajshahye Division,* —(*No.* 29, *dated* 29*th January* 1870).

With reference to your memorandum No. 249, dated 1st ultimo, enclosing Government order, &c., I have the honor to report that I have received suggestions regarding the necessity for legislation in respect of cattle disease from only one European landholder in the district, namely, Mr. J. J. Gray, an indigo planter of long experience in the country. I have had no opportunity of ascertaining the views of the native proprietors, for none of them know English; and as no vernacular translations of the papers were forwarded, I could not call upon them for any report. This is to be regretted, for an expression of the opinion of the native community would have afforded most valuable assistance in preparing suggestions as to the framing of so novel a law, opposed as it is to the religious principles of a large portion of the population, and the working of which, unless due precautions be taken, is likely to lead to a great deal of oppression.

2. My report, from the absence of any suggestion on the part of the native landlords, is, of course, imperfect; but it is now long overdue, and as a "takeed" has been sent regarding its submission, I have been obliged to submit it.

Interference deprecated; difficulties.

3. Mr. Gray, without absolutely denying the existence of a necessity for special legislation, rather deprecates Government interference; the difficulties in the way of enforcing any such law as the one proposed being, in his opinion, almost insurmountable, and the working thereof being likely to lead to a great deal of oppression. Mr. Gray has not submitted any suggestions whereby the Act might be more easily worked, and has contented himself with putting down some remarks regarding certain sections of Act II of the Madras Council. He considers, for instance, that the number of pound-keepers proposed to be entertained, the

Expenses.

expenses of whose pay, he supposes, will be borne by Government, will in itself prove an enormous expense, and an almost insuperable bar to the introduction of any such law. He also thinks that it will be a serious matter interfering with the prejudices of the Hindoos regarding the destruction of cows.

Co-operation of people in support of measures.

4. Mr. Gray expresses himself strongly in favor of the advisability of enlisting the sympathies of the native landlords in the cause of prevention of disease, and advises that there should be as little Police interference as possible. He has not, I am sorry to say, suggested any method whereby the proprietors and community at large in affected districts may be made to contribute their fair share of the expenses, and yet this is certainly an important point for discussion; for the imperial revenue cannot be fairly burdened with the entire expenditure, and any legislative action in the matter should make provision for the burden being at least partially distributed amongst the inhabitants of any tracts of country to which the provisions of the law may be extended.

Co-operation of landlords.

5. I entirely concur in the suggestion put forward by Mr. Gray, and contained in the letter from the Agricultural and Horticultural Society, as to the advisability of making an appeal to the landlords throughout the country, calling on them to aid in the eradication of a disease which so strongly affects their own interests; for unless the hearty co-operation of the landed interest be secured, any such Act as the one proposed will be difficult to work without a great deal of Police interference, a course of action which, I agree with Mr. Gray in thinking, is to be deprecated. Even with the aid of the Police, however, the enactments of the law will be but partially enforced, if the landlords generally are opposed to it, or even merely indifferent.

Slaughter.

That the provisions of any Act authorising or enforcing the destruction of cattle will be evaded in every possible way by the village population, more especially the Hindoos, there can be no possible doubt; it is evident, therefore, that unless the landlords, either personally or through their Mofussil agents, are induced to throw their weight on the side of the law, its enforcement becomes almost hopeless.

Zemindars should be invested with powers under the Act.

6. In order to strengthen the hands of such zemindars, Native or European, as respond to the appeal suggested in Mr. Blechynden's letter, and who show that they have a proper appreciation of the necessity of eradicating disease, I would suggest their being invested with some of the powers of a Magistrate under the Act—being empowered to enforce the segregation or destruction of infected cattle, to punish any persons disobeying their orders or infringing the provisions of the Act, &c.

Necessity of considering prevention as well as cure.

7. Act II of the Madras Council and the draft Act suggested in Mr. Blechynden's letter appear to deal with two different phases of the subject; the enactments of the former being confined to the treatment of the disease after it has broken out in any one particular tract of country, without making any special provision for preventing its spread; the latter dealing only with preventive measures, and not suggesting any remedy for eradicating the disease when it has once broken out. Both phases of the question should, I think, be considered, and any legislative action now taken should embrace both views of the subject.

Emergent application of law.

8. Any Act embracing the provisions as to treatment of the disease contained in Act II, and the penal clauses as to prevention suggested in the proposed Act, could only be passed as a special law to meet extraordinary cases, to be extended, when necessary, to some particular district, and suspended when the necessity for it had passed away. The extension to any

place of such a law, so distasteful to the inhabitants, and so contrary to all their prejudices, and even religious principles, could only be justified by the sternest necessity; but on the principle that prevention is better than cure, an Act forbidding the exposure for sale at fairs or markets of diseased animals might advantageously be passed, and might be made of general and present application. Regulation of fairs.

9. The suggestion contained in paragraph IV of the draft Act might be embodied into a law forbidding any cattle suffering from or infected with *gootee, puscheema,* or any other like infectious disorders being brought to, or exposed for sale in, any hât, fair, or other place where animals are sold, any animals so exposed being liable to confiscation, and the owner to punishment by fine or imprisonment; further, that the owners of hâts or their lessees be enjoined, under pain of penalty, to see that no such animals are brought for sale, and that if such are brought, that they be enjoined to report the matter at once to the authorities. The owners of hâts or their servants are always present on market days collecting hât dues, and could properly be held responsible for preventing the sale, or exposure for sale, of infected cattle. If the owners of hâts once come to understand that they will be punished if they allow infected cattle to be sold at their markets, the practice will soon be stopped, and one means of spreading infection greatly curtailed. Sale of diseased cattle.

10. Some such Act as I have suggested above would suffice under ordinary circumstances. In the event of any extraordinary outbreak of disease, however, it would become necessary for Government to apply special legislation; such legislation not being extended to any tract of country until the district officer has reported that disease has assumed so virulent a form as to justify extreme measures. To meet such cases, a law should be passed including the suggestions of the Agricultural and Horticultural Society as well as the provisions of the Madras Act. Extraordinary measures.

11. Special need for the adoption of stringent measures for the suppression of disease having arisen in any district, the tract of country affected should be at once proclaimed, limits assigned to it, and such proclaimed tract cut off, as far as possible, from communication with the rest of the country. The suggestions contained in paragraphs 2, 3, 6, 7, &c., of the draft Act might be adopted, and rules framed for the purpose of prohibiting or regulating the removal to or from such districts of cattle, hides, &c.; the ferries and roads leading to any proclaimed tract would have to be watched, and any attempt to remove cattle out of the infected districts made punishable. Proclamation. Cattle movements restrained.

12. The disease being thus confined, as far as possible, within certain circumscribed limits, it remains to be considered what measures should be adopted to deal with the disease within such limits. The most important measures to be observed appear to be the segregation of all diseased cattle, the cremation or burial of the entire carcasses, and treatment of the segregated sick. Provision is made for this in Act II, and I will proceed to discuss how far, in my opinion, such provisions are applicable to Bengal. For this purpose I will go through the Act, noting such sections as call for any comment. My suggestions, I may remark, are founded on the supposition that the land-owners will be induced to assist the Magistrate, for without such help some of them cannot be carried out. Segregation, cremation, or burial.

13. *Section* 2.—The word "Magistrate" should include all persons exercising the powers of a Magistrate, whether they exercise such powers in virtue of their office or have been empowered to act as such. Definition of "Magistrate."

14. *Section* 3.—The Act does not specify who is to bear the expense of putting up hospital pounds, and yet that some expenditure must be incurred is obvious, for there must be some sort of enclosure to contain the sick cattle, and there must be some shelter for them from sun and rain. I would suggest that these expenses be borne by the inhabitants of the village for whose benefit such pounds may be erected. The Act again provides for the appointment of the pound-keepers by the Magistrate, but does not specify what pay they are to receive, if any, and who is to be held responsible for this expenditure. Expense of erecting hospital pounds.

15. The pound-keeper should always be a man selected from amongst the villagers themselves. I would suggest that not one, but two or three of the most influential munduls or headmen of the villages, attached to any particular pound, should be appointed to this post. It is necessary that the pound-keepers should not be strangers, for the enforcement of the law will be harassing enough under any circumstances, and the annoyance will be intensified if its provisions are carried out by a perfect stranger: a native of the place, moreover, will be more likely to hear of any cattle being attacked with disease, and will have more influence to enforce obedience to orders. Pound-keepers.

16. The pound-keepers will require some little money remuneration for their trouble; they will be invested, indeed, with some authority, but that alone will not be sufficient reward for the trouble they will have to undergo. Looking after sick cattle, seeing to the disinfecting of cow-houses, &c., will entail on them an amount of trouble and expenditure of time for which they can fairly claim some remuneration. The pay of these pound-keepers could not be borne by the Cattle Fund, for the sum total would amount to a large sum, and Government must either make special provision for this expenditure, or leave it to be borne by the villagers themselves. Remuneration.

MALDAH.
E. E. Lowis, Esq.

17. *Section* 5.—I may here remark that the Act appears to take for granted that all the pound-keepers, and their name will be legion in a proclaimed district, will be acquainted with the best method of treating disease. Such men are not so numerous in Bengal, and it would be well if Government had a certain number of men properly trained as Veterinary Surgeons, who could proceed to any proclaimed district, and be placed in charge of a certain number of hospital pounds; their duties being to instruct the pound-keepers as to medicines and treatment, to see that infected cattle are duly brought to the pound, to pronounce on the necessity for the destruction of cattle, to see that the provisions regarding the burial of carcasses are attended to, &c.; they would, in fact, exercise general supervision over the pounds placed in their charge, being themselves directly subordinate to, and in communication with, the district officer.

Trained men.

Duties.

Necessity of skilled agency.

18. The villagers themselves are, I am sure, quite unable to cope with any virulent form of cattle disease; in fact, even in England, where there is no lack of skilful advice, it is well known what ravages were committed by this epidemic. The establishment of a body of persons capable of affording medical aid and advice on the outbreak of cattle disease is a necessity in this country which Government should seek to remedy, as I believe has been proposed, by regularly training a certain number of natives as Veterinary Surgeons. Their presence would be demanded in a proclaimed district; for it seems to me absurd to provide for the treatment of diseased cattle by making them over to the care of a number of ignorant villagers, such as the pound-keepers appointed under Act II must inevitably be. But persons in charge of hospital pounds will not only require instructions as to treatment; they will also require constant supervision, without which it is to be feared that evasions of the law will be often winked at. By the scheme I have suggested, the hospital pounds will be under persons who will in themselves combine the offices of supervisor and instructor.

Expenses.

19. These trained Superintendents will, of course, be paid by Government, but all other expenses, such as erection of hospital pounds, cost of feeding and treatment, remuneration of pound-keepers, &c., should be borne by the population of the affected tract.

Veterinary Surgeons.

20. *Sections* 6, 7, *and* 8.—The itinerant duties hereby devolving on pound-keepers could be, I think, almost better performed by the Veterinary Surgeons in charge of circles. The pound-keeper, if he is to attend to a large number of sick cattle, will have no time to go about; in fact, even for the proper treatment and care of the cattle, it would be better, as I have already suggested, to have two or three headmen appointed as keepers, instead of only one.

Expenses of feeding and treatment.

21. *Section* 9.—I do not concur in this; the expenses of feeding should be borne by the owner, and the expenses of treatment also, unless the pound-keeper who being a mundul, and therefore acquainted with his circumstances, can certify that the owner is too poor to defray the expense. I would also direct that the owner of the cattle, or some one on his part, should attend at the pound from time to time to assist in administering medicines, &c. Sick cattle should not be merely taken to the pound and left there to be cared for by the pound-keepers alone, unless, indeed, Government will consent to sanction with a pound-keeper an establishment of helpers.

Slaughter.

Objection.

22. *Section* 10.—The enforcement of the provisions regarding destruction of cattle will constitute the greatest difficulty in the working of this or any similar Act. An orthodox Hindoo will pay any penalty, or endure any punishment, rather than himself kill, or permit any one else to kill, his cows. It is a provision, moreover, the necessity for which it will be very hard to convince most Zemindars. It would, I fear, be useless expecting any common villagers, such as I have proposed for pound-keepers, enforcing the law on this point; the said powers should be entrusted to the Veterinary Surgeon in charge of the circle, and the enforcement of his orders will tax to the utmost his vigilance and care.

Licenses.

23. *Section* 12.—Regarding the granting of licenses, I would only remark that this provision must be cautiously enforced, for many ryots own land at a distance from their houses, and the withholding of licenses will, in many cases, amount to a prohibition to cultivate.

Penalties.

24. The penal clauses call for no special comment, except that the Police should be permitted to interfere as little as possible. The whole arrangement should be carried out, as far as possible, by the district officer in concert with the landlords, and through them with the people; the only outside interference being that of the trained Veterinary Surgeons sent by Government, and invested with the charge of certain defined circles, and empowered to supervise the treatment of sick cattle, &c., within them.

COOCH BEHAR.

COOCH BEHAR DIVISION.

Col. J. C. Haughton

From COLONEL J. C. HAUGHTON, C. S. I *Commissioner of the Cooch Behar Division, to the Secretary to the Government of Bengal,*—(*No.* 2129, *dated* 29*th July* 1870).

In reply to your letter, dated 22nd instant, No. 2506, calling upon me for a report as to he form legislative enactment should take for the prevention of the spread of cattle disease, I beg to say that it appears to me that the proposal to legislate upon the subject is based upon the assumption that the disease which is most destructive is similar to the rinderpest which was so destructive in Europe, and consequently infectious.

2. It is my present belief that infectious disease among cattle in India is comparatively rare, and that in fact murrain in some localities is often due to purely mechanical causes,—caterpillars or other insects in the grass, poisoners who poison the food, or insert poison through wounds and the like. COOCH BEHAR. Col. J. C. Haughton.

3. The importance of such a measure as that proposed can scarcely be overrated. It is a measure affecting directly every village and almost every homestead in India,—a measure wherein, if a mistake is made, more mischief may be done than by almost any other that can be contemplated. Importance of legislation.

4. My opinion is that there is not at present sufficient information before the public on the subject of cattle disease to warrant any legislation at all. I would therefore respectfully crave to be excused from giving an opinion as to the form legislation should take as to cattle disease. Legislation premature.

ASSAM DIVISION. ASSAM.

From LIEUTENANT-COLONEL W. AGNEW, *Officiating Commissioner of Assam, to the Secretary to the Govt. of Bengal, General Department,*—(*No.* 361, *dated 29th December* 1869). Lieut.-Colonel W. Agnew.

In compliance with the instructions conveyed in your office letter No. 2122, dated the 9th of October last, I have the honor to make the following report in regard to the opinions held in this division respecting the form which legislative enactment should take for Bengal for the prevention of the spread of disease among cattle, the machinery by which it could best be worked, and the source from which funds could most easily be provided; and I further beg leave to submit the statement asked for in Officiating Junior Secretary Mr. Mackenzie's letter.

Major Comber.	Lieutenant Butler.
Major Lamb.	Captain Campbell.
Lieutenant Michell.	Mr. Driberg.
Captain Gregory.	

2. The Officers consulted are named in the margin, and I proceed to give an abstract of their replies.

3. Major Comber, Deputy Commissioner of Kamroop, says :—

"If it has been determined that legislative enactment should take place, I can see no objection to the Madras Act as applicable to Bengal; in Assam, however, there would be some difficulty in enforcing its provisions, there being no village chowkeedars as in Bengal, and the villages being so scattered and inaccessible that the Police could but exercise a very limited control. Madras Act approved. Difficulty.

"The first thing to be done in Assam is to compel the people to keep their cattle within bounds. At present each man allows his cattle to stray about, and great damage is done to the crops, besides causing disease to spread. A more extended system of village pounds should be established and carefully worked. Such an arrangement would, I am sure, be acceptable to the people generally, if I may judge by applications which have been made to me during my tour to establish pounds. Pound system should be extended.

"The machinery by which the proposed Act could be worked would be the Police and the mouzadars; by neither nor both, however, could its provisions be effectually carried out, the former being too scattered, and the mouzadars having no subordinate through whom to obtain village information. I would advocate the scheme for village chowkeedars proposed in the 8th, 9th, and 10th paragraphs of Mr. Campbell's letter No. 102, dated 6th July, to your address. Agency. Chowkeedars.

"With regard to the cost of working the Act, it should be met from the Cattle Pound Funds established under Act III of 1857; but the state of funds as they now stand would be insufficient to meet the cost of burying any large number of dead cattle 6 feet below the surface, as required by the proposed Act: it will be necessary greatly to increase the number of pounds in the interior." Expenses. Burial.

4. Major Lamb, Deputy Commissioner of Durrung, insists upon early segregation of diseased cattle at places at least half a mile away from any village, and immediate cremation or deep burial after death. He is opposed to the destruction of the diseased animal. He would impose the Segregation, cremation, or burial.

Extract, paragraphs 8, 9, *and* 10, *of Mr. Campbell's letter.*

8. "The remedial measures which I would propose would be to require the inhabitants of every village consisting of more than 20 houses to elect an individual from among themselves to fill the post of village chowkeedars. The remuneration which such an individual would require would not be much, as I have reason to believe that the post would be coveted. I should think that a remission of revenue to the extent of Rs. 6 per annum would suffice. The duties of these men would consist in appearing at least once a week before the mouzadar and keeping him informed of what was going on within their respective charges. The mouzadars should be required to keep up an attendance register, and to forward to the thannadar a weekly report, embodying all the information derived by him from the chowkeedars. The Police functions of the mouzadar should be defined by a set of rules, and he should be made to fix his residence in a central spot in his mouzah and to reside there always. I would also suggest that each mouzadar be furnished with an office building on a standard plan. These houses might also serve as inspection bungalows for the district or sub-divisional officer while on tour.

9. "The above arrangements might be carried out with very little extra expense to Government, as the remission of revenue to chowkeedars should be deducted from the commission paid to mouzadars, a portion of whose duties they would be performing. The cost of a mouzadar's cutcherry would not be much, as material would be found abundant in close proximity to the villages, and labor would also be plentiful and cheap.

10. "By arrangements of this nature the administration would be greatly strengthened, and provision would be made for the proper carrying out of any rules affecting the population at large which the Government might from time to time promulgate."

ASSAM.

Lieut.-Colonel W. Agnew.

Gáonburáhs.

Inspection of herds of imported buffaloes.

Disposal of carcasses.

duty of reporting the appearance of sickness on gáonburáhs or village elders, a recognized class in Assam, who should be made under penalty to send intimation of the circumstance to mouzadars. He thinks the disease is brought to Assam by infected cattle in the herds of buffaloes that are imported from Bengal for sale here, and would have these inspected at fixed spots by persons qualified to pronounce whether disease exists amongst the animals or not, would prohibit the removal of cattle from infected localities, and would restrain the people from throwing carcasses into rivers—a practice that tends, in his opinion, to propagate disease.

Draft Act approved.

Agency.

Remuneration.

Skilled men.

5. Lieutenant Michell, Officiating Deputy Commissioner of Nowgong, approves of the provisions of the draft Act, but thinks a more simple enactment would suffice for Assam. He is of opinion that mouzadars should be required to undertake the duty of working the Act, and that they are already so well paid that no further remuneration need be given to them for the extra duties they may be required to perform. He would have a person acquainted with the mode of treating cattle disease at each sudder station pound, and would pay him from the pound funds.

Legislation necessary.

Early notice.

Movements of cattle.

Agency.

6. Captain Campbell, Deputy Commissioner of Seebsaugor, thinks special legislation is undoubtedly called for, and that compulsory destruction of diseased cattle should be insisted on. Would make neglect on the part of owners or herdsmen to report disease in their herds a penal offence, and would hold mouzadars responsible for bringing to notice outbreaks of disease within the limits of their mouzahs. Would also prohibit, under penalty, the removal of cattle "from one part of an infected district to another;" but thinks it would be difficult in Assam to enforce obedience to such an order. Says also that, owing to the great extent of uncultivated land in the country over which cattle range, it is not easy to say what machinery would be required effectually to carry out the objects in view.

7. The following is an extract from the reply I have received from Captain Gregory, Deputy Commissioner of Luckimpore:—

"A copy of Mr. Higgs' answer is annexed, and in great measure represents my own opinion on the draft Act submitted by Mr. Blechynden. I endorse emphatically Mr. Higgs'

Stamping out unpopular.

impression, that any attempt to *stamp out disease* by the destruction of affected cattle would cause deep dissatisfaction amongst the major and more influential portion of the population, to which such a proposition would appear as monstrous as a proposal to guard against the spread of small-pox by the destruction of an affected human being would be to us.

Segregation, quarantine, and depasturing advisable.

"Whilst allowing that the clauses relating to segregation, quarantine, and depasturing diseased cattle would be difficult to enforce, I think that they could be carried out to such an extent as to affect the spread of disease to a very appreciable extent; and this Mr. Higgs himself allows in his 14th paragraph, in which he says that the measures taken and the orders passed during the prevalence of cattle disease in this district would have fulfilled his idea of the way in which contagion should be prevented had they had the authority of law to enforce their stringent observance; for the measures adopted were the establishment of quarantine of affected mouzahs, the publishing of orders prohibiting the movement of cattle from one part of the district to another, and, in the station, the deportation of carcasses.

Disposal of carcasses.

"Section 7 of the draft Act is a very important one, and I am sorry that it appears to have escaped Mr. Higgs' notice, as he has passed it without remark. Its provisions seem to me to be very salutary, but I think that, in Assam at any rate, the task of the disposal of carcasses, tainted fodder, &c., and the purification of articles and buildings likely to propagate infection, would have to devolve on Government, for the number of cattle is so large, so many are owned by single individuals, and the disease is so rapidly and sweepingly fatal, that it would be physically impossible for proprietors themselves to perform this duty, and the loss of their cattle would deprive them of the means of paying others to do it for them.

Agency.

Police.

"No machinery exists at present here by which the Act could be enforced. The fiscal officers have already more to do than they can efficiently perform, having regard to the larger area of their mouzahs, and the difficulties of locomotion and communication they have to encounter, and there are no headmen or chowkeedars; but I think that the agency of the Police might be used for this purpose, the numbers of the force being temporarily enhanced, or the emergency being met by the temporary deputation of details from other districts for the purpose when necessary.

Cow-tax.

Pound fund.

"The funds for the working of the Act could, I think, be most easily provided by the imposition of a cow-tax at the rate, say, of 4 annas per head for each full-grown cow per annum, supplemented by the surplus income of the pound fund. This, I think, would be an even distribution of the burden of expenditure amongst those benefited by it, and could be paid by all cattle proprietors without distress.

Markets.

"I have not noticed the provisions of sections 4 and 5 of the draft Act, for as cattle in this part of Assam are never exposed for sale in open market or other public place, they would be inoperative here; but I would suggest that a clause should be added to section 1, empowering the Lieutenant Governor to depute the powers proposed to be vested in him by that section to Commissioners of distant provinces like Assam, in which the delay in carrying them out

consequent on a reference would materially affect the efficacy of remedial and preventive measures. The sections providing for the realization of penalties imposed under the Act appear unexceptionable, and call for no remark." ASSAM. Lieut.-Colonel W. Agnew.

8. In a subsequent letter, written after receipt of a copy of the Madras Act, he expresses an opinion that it is quite inapplicable to Assam, based as it is on the supposition that there exists, or that it is possible to create quickly, a class of native farriers sufficiently skilled and trustworthy to be vested with the charge of hospital pounds. He adds:— Madras Act inapplicable to Assam.

"Supposing, however, this difficulty overcome, the conditions of the country are so peculiar and the people are so rude, conservative, and apathetic in ideas, that it would be very difficult, if not impracticable, to carry out the provisions of the Act effectively, or to effect benefit in any way commensurate with the expense of doing so; and whether or no the expense of the measures for enforcing the segregation of diseased cattle, the giving notice of the outbreak of disease, the disposal of carcasses, the destruction of tainted fodder, &c., and the purification of buildings and vehicles likely to spread contagion, for which provision is made in the draft Act submitted by the Agricultural and Horticultural Society, could be met from the Cattle Pound Funds established under Act III of 1857, without the imposition of any special cess for the purpose, I am quite certain that hospital pounds could not be established, and skilled, and necessarily highly-paid, pound-keepers maintained without special provision being made to meet the expenditure. Objection.

"Assamese cattle are of such small value that I am convinced that, in the majority of cases, whether the animal lived or died, its being impounded and treated would result in a loss to the pound fund, for in nine cases out of ten the fees leviable under section 11 of the Act would exceed in amount the sum which the beast would realize if sold after cure by auction." Small value of Assamese cattle.

9. Lieutenant Butler, Officiating Deputy Commissioner, Naga Hills, considers the Agricultural Society's draft Act contains all the provisions that are needed. He would work it through the agency of mouzadars, restricting the interference of the Police to reporting infringements of the law; and he thinks Government should provide whatever sum might be required to carry out the provisions of the Act in excess of that derivable from the pound fund. Draft Act approved. Agency. Funds.

10. Mr. Driberg, Extra Assistant Commissioner, in charge of the Mungledye Subdivision, makes the following remarks:—

"It appears to me that for Assam at least a few rules having the force of law would be sufficient. Police rules considered sufficient.

"The chief preventive measures are—

"1*st*.—Segregation of diseased cattle. Segregation.

"2*nd*.—The burial of the carcasses of cattle that have died from the disease. Burial.

"3*rd*.—The stoppage of cattle from going to or coming from infected districts or parts of districts. Stoppage of movements.

"The prohibition of skinning of carcasses and of traffic in hides will not be necessary for Assam, as cattle are never skinned in the province. Skinning.

"To enforce the above preventive measures, the simplest plan would be to proclaim the mouzahs or certain portions of districts where the disease may have appeared, and to issue a notice directing the observance of the preventive measures which should be specified in the notice, and any person disobeying the order should be liable to punishment under section 188 of the Indian Penal Code. Proclamation. Section 188, I. P. C.

"If a law were passed making that section applicable, and directing that a general notice for a whole mouzah be deemed 'an order promulgated by a public servant,' I think it would be sufficient to enable the authorities to enforce any rules necessary for the prevention of disease. rendered applicable.

"It would be better to employ the mouzadars to give effect to any rules that may be adopted; they are personally acquainted with their ryots, and have more opportunities of explaining the rules and seeing them carried out than the Police could have." Agency.

11. Of the gentlemen not in the service of Government whose opinions were asked for, the reply* given by the Revd. Mr. Higgs is the most valuable. He has entered, indeed, much more fully into the whole subject than any one else who was consulted about it; and I recommend his letter to the special notice of Government, concurring entirely, as I do, in the opinions and views expressed in it.

* Copy annexed.

12. Mr. F. F. Severin thinks—

"That a ryot should give notice to the headman of his village when he has reason to believe any of his cattle are diseased. That cattle known or suspected to have the disease among them should not be allowed to graze on the same ground as the remainder of the village cattle, nor should the owner be allowed to sell or remove them to any other village or mouzah. Early notice. Segregation.

"Cattle dying between the beginning of January and the end of May, from whatever cause, should either be removed to a considerable distance from grazing grounds or villages, or be Carcasses.

ASSAM.

Lieut.-Colonel W. Agnew.

Burial.

buried sufficiently deep to prevent the carcasses from affecting the surface soil. Cattle dying from plague should be most carefully buried at any time of the year. In Assam skins are never, I believe, removed from the carcasses of cattle, unless they have been slaughtered for food; and I don't remember ever having seen meat in any bazaar. The mouzadars and the headmen in the different villages would be the best persons, I think, to empower to see that any rules that might be laid down were carried out. It appears to me, however, that it is absolutely necessary that there should be at least one person in the district who would know the disease termed 'cattle plague' when he saw it, and whose duty it should be to point out the best remedies against the disease. It would also be advisable to keep in store at the different stations carbolic acid, or any other medicine that might be deemed valuable, to be either sold or given to the ryots on application.

Skilled agent.

Medicines.

Disease from grazing.

"The disease that carries off such a number of cattle yearly here in Durrung in the early spring is, in my opinion, not the cattle plague, nor do I think it infectious. The disease appears to me to be brought on entirely by the reckless manner in which the ryots graze their cattle. During the cold months they are allowed to go anywhere they like, and chiefly feed on the stubble; but as soon as the early crops have been put in the ground, they are compelled to feed only on young baringhá or ulee jungal, which at that time of the year springs up very fairly; the cattle eat it greedily; but the change from the mild food and sweet straw they have been accustomed to for months is too sudden. The same diseases I have noticed here I saw once at home, when the cattle in a dry summer were taken from the fields and allowed to graze in a forest; in a few days a number of them died, but all signs of disease disappeared when they were taken back to the fields they were accustomed to.

"It would, however, be difficult to persuade an Assam ryot that the way his father grazed his cattle is not the right one."

* * * * * *

14. Mr. Fisher, Superintendent of the Assam Company, does not seem to have expressed any opinion beyond fear that the disease will not be got rid of without compulsory destruction of all diseased cattle.

Apathy of people.

15. Mr. R. Bainbridge thinks the Assamese are so apathetic, and their belief in fate so strong, that they will carry out no orders unless absolutely forced to do so, and he doubts if much can be done towards checking outbreaks of cattle disease. He ascribes its growth to poisonous water and low feeding, having noticed that well-fed animals are seldom attacked. He strongly urges the necessity of stringent orders being given prohibitory of the custom of throwing carcasses into rivers, and points out the evil results of this practice, as it affects the public health.

Throwing carcasses into rivers.

Commissioner's opinion.

Madras Act inapplicable to Assam.

Difficulties.

16. The opinion I would ask leave myself to express is, that the Madras Act is quite inapplicable to the present condition of this province, for it could not be worked effectually, except through the agency of a very intelligent and trustworthy body of men, skilled to some extent in veterinary art, and no such class exists in Assam; while the dislike and dread of our rural population to strangers, and their mutual inability to understand one another's language, make it at least very doubtful whether much benefit would result from the appointment of foreigners to the office of hospital pound-keeper, nor could I recommend Government to introduce a Bill arming any one with authority to order destruction of cattle, feeling convinced, as I do, that the exercise of such power would cause widespread dissatisfaction in this part of the country, and would probably lead to enforcement of the law being resisted. This remark applies, of course, with equal force to the same objectionable clause, as I take leave to think it, in the draft Act which the Agricultural and Horticultural Society has drawn up, but in other respects I approve of the Society's Act, and should like to see it pass into law, though some of its provisions, I fear, can only be partially put in operation here, unless, indeed, an agency on a vast scale were organized for working the law, a measure I am not prepared to advocate.

Slaughter.

Stamping out hopeless.

Segregation.

Quarantine.

Disposal of carcasses.

Early notice.

Hides. Fairs.

Agency.

I am of opinion, therefore, that in Assam at least we can only hope to mitigate the evil, and that to stamp out the disease is a task we could not perform by means it would be prudent to use. Segregation on a minute scale I do not think we could possibly enforce, but a system of quarantine of affected mouzahs could be carried out, and cattle traffic to and from districts could be regulated in such manner as may be seen necessary. Obedience also to orders for the disposal of carcasses of dead animals and for the immediate conveyance to district officers of news of the appearance of disease in any mouzah amongst the cattle could be ensured, as could distribution to the people of such remedies as may be found most efficacious in its treatment. There is no traffic in hides, and no cattle fairs or markets in the province; so that we should not be called upon to deal with the provisions on those points of any law or rules that may be promulgated. The agency through which these should be worked is, I should say, that of mouzadars and the Police combined; the former to report appearance of disease, and to be employed in carrying out such measures as may be thought necessary to check its spread; the latter to enforce obedience to orders when the mouzadars are found powerless in the matter. Police interference I should wish to see used as sparingly as possible.

ASSAM.
Lieut.-Col. W. Agnew.

In respect to the source from which funds could most easily be provided for the purpose in view, I would propose that the Cattle Pound Fund should be reserved exclusively for this use, and for the improvement of the breed of cattle in the country generally,—a measure that, by rearing a healthier and better class of animal, would tend without doubt to diminish predisposition to disease, for the comparative immunity from the sickness that now prevails, and capacity to resist its effects enjoyed by cattle of good breed, seems a well-established fact. I would therefore increase the number of pounds, establishing them in all populous neighbourhoods where the people wish to have them. This source failing to yield an income sufficient to meet the expense of working the provisions of the Act that may be passed, recourse should be had to taxation; and in Assam this could be imposed without difficulty, as we have the means at hand of knowing who are the great body of cattle owners. I allude, of course, to the payers of revenue, on whom I would impose a tax of say one pie per rupee of their rent, other owners of cattle being taxed at so much per animal. I shall be sorry, however, if it be found necessary to resort to taxation in any form, nor do I think the measure will be called for if pound profits be reserved in future to meet demands of the nature under discussion.

Funds.
Pound fund.
Increase of pounds.
Taxation.

Receipts, Disbursements, and Balance of the Cattle Pound Fund in Assam during the year 1868-69.

Districts.	Receipts.	Disbursements.	Balance.	Remarks.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Kamroop	1,901 10 0	880* 8 3	1,021 1 9	* Out of this amount Rs. 715 were paid to the Gowhatty Municipality, agreeably to Government resolution dated 28th June 1865.
Nowgong	1,243 11 6	78 3 8	1,162 7 10	
Durrung	1,187 7 9	17 15 6	1,169 8 3	
Seebsaugor	2,921 1 6	32 12 0	2,888 5 6	
Luckimpore	1,430 1 0	35 8 0	1,394 9 0	
Total ...	8,680 15 9	1,044 15 5	7,636 0 4	

DEBROOGHUR.
Revd. E. H. Higgs.

From the Revd. E. H. Higgs, *to the Deputy Commissioner, Debrooghur,—(dated 16th November* 1869).

I have to acknowledge receipt of your letter of the 11th instant, requesting my opinion on certain clauses of the draft Act submitted for consideration of Government by a Committee of the Agricultural and Horticultural Society, with a view to prevent or check the ravages of the cattle disease.

Draft Act approved.

2. The remedial measures mentioned in Mr. Blechynden's letter to the Secretary, Bengal Government, Judicial and Political Departments (paragraph 4), appear to include almost all that can be desired for the purpose, and the draft Act, as submitted, effectually provides for legally enforcing the adoption of these measures.

3. I have been long resident in this part of Assam, and have travelled over nearly the whole of the province.

Cattle disease never absent.

4. Within my memory, a cattle disease first swept through Assam about 12 years ago, and since that time it may be said that disease among the horned cattle, in an infectious form, has never been absent from the province; it appears sometimes here, sometimes elsewhere, more or less severely, and for a longer or shorter time, but is never entirely absent; isolated cases occurring every week at some place or other.

5. Under these circumstances it is evidently most essential that some measures should be adopted, if possible, to stamp out the disease always ready to break out and extend itself under circumstances favorable to its progress.

Habits of people

6. But the long-established and deeply-rooted customs and habits of the people of Assam are no less peculiar than the features of the country itself and its climate, and they are very peculiar; and I have very grave doubts whether any legislation, general or special, would suffice to meet the difficulties present.

Slaughter ; impossible.

7. The most effectual method of eradicating the disease is promptly to destroy every animal showing symptoms of the disease; but I am quite persuaded that it would be next to impossible to do this in Assam.

8. The Assamese are a tractable, docile race, but any attempt at the destruction of their horned cattle would raise a spirit of resistance which could not be overcome. I can think of

DEBROOGHUR. Revd. E. H. Higgs.

nothing that would so hurt their most religious feelings; nothing would appear to them so cruel or oppressive. You might raise their taxes manifold. You might interfere in their most private social arrangements, and pass penal Acts that would shame the most despotic Government in Europe, and the Assamese would bow the neck to all such measures quietly, compared with the manner in which they would meet the destruction of their cows and oxen. No race or people in India, I believe, is so priest-ridden as the Assamese.

Prohibit importation.

9. The importation of cattle into particular districts should be prohibited when found necessary, and it would be easy to carry this out. The Assamese, as a rule, seldom or never move their cattle about from the district either for sale or otherwise; sale and exchange of cattle are effected chiefly near to home.

Sepoys

10. The great offenders in Assam in propagating the cattle disease are the sepoys of the local regiments. When the detachments are relieved they think it necessary, and quite according to rule, that they should move their cows with them, probably in the proportion of a cow for every sepoy: if they start with infected cattle they simply spread the disease through the length and breadth of the land.

11. The two severe cattle plagues I have witnessed in Assam were both brought to the Debrooghur district by the sepoys. On both occasions the Golaghat detachment was moved back to head-quarters; they brought their cattle with them, and within a few days the large herd of the regimental cattle was infected, and cows died by hundreds, thence it spread through the whole district. It would not be difficult to prevent disciplined soldiers moving about attended by a herd of cows, and then the most active agent in the propagation of the disease would be controlled.

Segregation, quarantine, and depasturing.

12. Practically, the clauses relating to segregation, quarantine, and depasturing of the cattle must be inoperative in Assam, notwithstanding any stringency in the wording of the Act or the penalties attached. Little need be said to show this. It has hitherto been found difficult, if not impossible, to deal with the great evil of cattle trespass in Assam, and it has been left alone in all its irksomeness.

Difficulties.

13. The Assamese cannot seemingly be taught to think otherwise than that they have an incontestible right to let their cattle loose to graze where they please, save only during the customary three months close time. Every Assamese buys as many cows as he can afford; and as long as he has standing room for them, it is no concern of his where they are to graze: he may have a score of cattle, but not a square foot of land beyond his house, yet he would think it an intolerable hardship to have to arrange for depasturing his cows. Those that are giving milk are brought home at night, milked in the morning, and turned loose afterwards till the evening.

Segregation and village quarantine impossible.

14. I think, considering the present features of the country, that village quarantine and segregation of cattle would not be possible. It is quite feasible to confine the cattle of the large districts within the boundaries of their respective districts; but quarantine on a small scale would be difficult.

15. I believe that the only practical way of mitigating the evil of the cattle disease is that lately adopted in this district. The steps then taken and the orders passed were all that could be done, and if they had legal authority and were stringently enforced, little more in the way of checking the disease could be done.

Treatment.

16. The natives readily adopt any suggestions for treatment of diseased cattle, and would use any remedy that proved successful. If there be any remedy for the treatment of the disease at once simple and within the reach of the people, it should be published far and wide, and would do great good; the remedy must be simple and easily obtained. The people have no patience to follow out an elaborate course of treatment.

Cattle plague beneficial.

17. I am afraid I have prolonged my letter beyond the limits you anticipated; but before I close I will record my dissent to the idea that the cattle plague has been a very great evil to Assam. Probably it has indirectly been of benefit to the country.

18. We are apt to measure the evils of a cattle plague everywhere by the ruin that would result therefrom in England or some other European country, where not only individual loss is involved, but the loss of national wealth. In Assam it is quite different. The loss occasioned by a cattle plague is almost entirely confined to comparatively a few individuals, and they are only sensible of their loss by being deprived of their customary draught of sour milk. If all the cattle in Assam were to die off, scarcely any loss in capital would accrue; and as for the agricultural operations being affected, I do not believe in that. It is a fact that the present rice harvest will be the most plentiful that has been seen for a score of years, and yet the cattle plague, which was at its fiercest in the most busy time of the year for cultivation, is the most severe that has occurred within the memory of most people.

19. The good that has been indirectly effected is, that the remnant of the young cattle will now have a chance of growing up into better developed and stronger animals than have been seen in the country for some years, because they will be better fed. Paradoxical as it may

Pasture.

sound, the pasture of this part of Assam is extremely limited and scanty, not nearly sufficient

for the myriads of animals let loose over it day after day. It is absolutely necessary to thin out animals, if all are not to suffer, and in Assam they are rarely killed. DEBROOGHUR. Revd. E. H. Higgs.

One has only to look at the miserable specimens of horned cattle general in Assam, to decide at once that they have been half-starved all their lives.

Cattle Pound surplus in hand during the year 1868-69.

				Rs.	A.	P.
1.—Presidency	Division	...	...	20,264	4	6
2.—Orissa	„	...	...	4,794	11	11
3.—Dacca	„	...	...	31,634	1	2
*4.—Chittagong	„	...	...	4,942	14	10
†5.—Burdwan	„	...	...	5,719	11	9
‡6.—Chota Nagpore	„	...	...	1,331	5	3
7.—Patna	„	...	...	9,738	2	7
8.—Bhaugulpore	„	...	...	20,269	13	11
§9.—Rajshahye	„	...	...	4,993	15	9
‖10.—Cooch Behar	„	...	...	0	0	0
¶11.—Assam	„	...	...	7,636	0	4
		TOTAL RS.	...	1,11,325	2	0

From K. MCLEOD, Esq., A. M., M. D., *Assistant Surgeon, Bengal Medical Service, to the Junior Secretary to the Government of Bengal,—(dated 7th October* 1869). Dr. K. McLeod.

In accordance with permission received,* I have the honor to offer the accompanying paper on the "sanitary treatment of epizootics," as supplementary to my former report, in which medical treatment held a more prominent place.

*Letter from J. Westland, Esq., Officiating Junior Secretary to the Government of Bengal, dated 9th September 1869.

2. I trust that this paper, in which I have laid down systematically and clearly all the information I possess on the subject, may prove of some use.

Measures, legal and sanitary, adopted by European countries to oppose the introduction and spread of cattle plague, considered in relation to the circumstances of cattle disease as prevailing in India.

A.—Before proceeding to discuss the particular legal and sanitary expedients adopted in Europe to guard against the invasion and spread of infectious cattle diseases, there are one or two preliminary considerations which have a most important bearing on the whole subject to be noticed. Preliminary considerations.

I.—Are the diseases, against whose ravages it is sought to protect cattle, capable of spontaneous development in, or always imported into the country, province, district, or locality? If the diseases are produced by circumstances permanently abiding in, or apt occasionally to arise in any area of country, from whatever cause, the problem of protecting cattle residing within that area from their influence is entirely different and distinct from the question of preventing the importation of these diseases into the area. In the one case the question is,—What circumstances or causes prevail or arise in the area to give origin to disease? In the other case,—By what methods is disease apt to be introduced into the area? The difficulty of the first question is infinitely greater than that of the second. It is in fact an inquiry into the primary or immediate origin of the diseased conditions under consideration. We can, for example, in most cases easily ascertain how small-pox, measles, or scarlatina are imported into a locality or household, but it were a very different matter, if the idea of importation became from any cause impossible, to ascertain the local causes of an outbreak. It is comparatively easy—a matter of mere care and detail—to exclude an importable malady, when all the possible means of importability are known; it is utterly impossible until all the conditions of the development of an indigenous or endemic malady are known to prevent its occurrence. Diseases spontaneously developed in, or imported into, an area? Greater difficulty of dealing with an indigenous disease.

Now, with reference to Europe, universal testimony and scientific research have established that the "rinderpest" is indigenous to, or at the least always prevailing in, a limited area, namely, the Steppes of Russia, and it is unhesitatingly declared by every other country in Europe that this formidable and fatal disease is not capable of spontaneous generation in their territories; but when it appears is always due to importation. The specific routes and means EUROPE. Origin of "rinderpest" in the Steppes of Russia.

* No statement is furnished from the district of Chittagong.
† The district of Bancoorah is omitted.
‡ No returns were received from Hazareebaugh and Maunbhoom.
§ Returns from Moorshedabad, Pubna, Maldah, and Rajshahye not received.
‖ Returns not forwarded from this Division.
¶ No return submitted from the Khasi and Jynteah and Naga Hills.

Dr. K. McLeod.

of importation are laid down, and instances of importation are abundant. Indeed, it is laid down as a preface to all regulation, as an indisputable principle of legislation on the subject—by all European countries except Russia—that it is only by importation, and by no other means, the disease can arise; and even when the precise means of importation remain undiscovered, as in the case of England in 1865, this is rather attributed to a failure in the attempt to trace the evidence of importation, than to the possibility of the disease arising in any other way.

Imported into every other country of Europe.

Regulations framed on the belief of invariable importation.

All the laws and regulations of European countries proceed upon this axiom, and both reason and experience show that if the disease, when once imported, can be promptly and completely stamped out, there is nothing further to fear.

Austrian regulations.

The preamble to the Austrian regulations distinctly states that the objects to be attained are—

1.—To prevent the plague from being introduced from the land of its home, and

2.—To destroy the imported plague as quickly as possible by destroying all the "vehicles and organs of the contagion."

INDIA.

Importation doubtful.

In India we have not, unfortunately, a fundamental principle of this sort, clear and precise, to proceed upon. On the contrary, all is vague and dark. We know not, and we can never ascertain, whether our plagues were in the first instance imported or not. All we know is, that they spring up and ravage from time to time here and there. There is positively no evidence, and I can't see or conceive the possibility of obtaining any, to show whence and how these plagues arose. My own impression, derived from a close study of all that has hitherto come to light on the subject, is, that these diseases are *enzootic* in this country, spontaneously generated by conditions inherent in the soil and climate, and not owing to importation from without; that in fact we are in the position of the Steppes, and have these diseases as permanent residents in the country.

Cattle plague probably enzootic.

Permanently resident in the country.

We are seldom or never free of them. Year by year they break out, sometimes here and sometimes there. Whether originally of foreign origin or not, they have now established a firm hold; and if not universal within the area of Hindostan, are nearly so, inasmuch as if we take a certain series of years, few places will not have been visited by them.

Greater difficulty in dealing with it in consequence.

Our position is, thus, one of much greater difficulty than that of any European country, not even excepting Russia, for the greater part of that country is similarly circumstanced as regards rinderpest to other countries of Europe.

Information imperfect.

In place of a single all-important leading principle of action there is doubt, imperfect information, and positive ignorance. Knowledge, thought, and experience have been accumulating on the subject in European countries since the beginning of the 18th century; in this country the subject has been overlooked till within the last few years, and I think I can safely aver that no single outbreak has been thoroughly and exhaustively investigated from its beginning to its termination. It is of the utmost importance to know what the precise nature of the disease has been and the precise loss of cattle; but, for purposes of sanitary legislation, the origin and progress of disease—its precise and minute history of rise and spread from beginning to end—are far more important desiderata.

Narratives of outbreaks a desideratum.

Necessary for directing preventive measures.

This can only be obtained by special investigation, and can only be exhibited by a detailed narrative of the particular outbreak from beginning to end. Such narratives are absolutely necessary in order to furnish clear evidence of the behaviour of the disease as an epizootic on which to found preventive action. In Europe, as I shall show, preventive action has completely superseded medicinal appliances, and has in numerous instances proved successful.

Natural history of plagues imperfectly known.

In this country, though from the scraps of information obtained from various squarters certain leading facts have been made out, the natural history of plagues has not been studied with that particularity or detail which is absolutely necessary to render it a basis for action which may interfere with personal liberty or private as opposed to common interests.

Two facts well determined.

Two facts, however, of exceptional importance stand out prominently among a host of conjectural or unproved assertions. They are—

Occasional invasion of a particular locality.

1*st*.—That a particular area of country, be it a province, district, sub-division of pergunnah, is only attacked or invaded occasionally; that is, that although these diseases are apparently permanent in the country, they are not permanent in any particular segment of it.

Diseases contagious.

2*nd*.—That the diseases are contagious and infectious.

I have elsewhere adduced satisfactory proofs of these statements, but it is still unascertained in what manner these diseases, universally believed to be contagious, effect their entrance into a sound locality and how they spread in it. These points can only be determined by closely watching and following up the disease; but, given an infectious disease or diseases, and a series of areas in which they do not reside permanently, the problem of prevention and limitation is placed on a more promising footing, and the object to be accomplished becomes clear, namely, to prevent the invasion of a sound area by a highly contagious disease. The measures by which this object is to be attained will then depend upon the circumstances of the country, its inhabitants, and cattle. This leads me to the second consideration, which I would dwell shortly upon.

The problem of prevention stated.

Dr. K. McLeod.

II.—The purposes for which cattle are employed, and the manner in which they are bought and sold, housed, grazed, herded, moved about and fed, in the fulfilment of these purposes, are most important considerations, as affecting, 1*st*, the modes in which they may contract contagious diseases; and, 2*nd*, the laws or rules which may be imposed to prevent or limit that result. Here again, between Europe and India, there is a most fundamental difference. In Europe cattle are used primarily for *food*. Subordinate to this is the use of their skins, horns, tallow, &c. Next in importance is their use as givers of milk and the various dairy products derived from it; and 3*rdly*, in some countries they are used as beasts of draught and burden.

Purposes for which cattle are used, and their life and treatment as affecting—liability to disease, and the laws to prevent these.

The use of cattle for food involves—

1.—A constant *destruction* of them, the number destroyed depending upon the number of consumers.

2.—A systematic *breeding* for the purpose of supplying the constant demand.

Herding.

This necessitates herding on a certain area, for the greater number that can be produced on a certain area the more profitable. It also involves association and contact, which, however, need not extend beyond the single area or farm. It is easy to see how this particular condition favors the spread of infectious disease.

Association.

Fattening.
Movements.
Markets.

3. *Fattening.*—Most commonly the farm on which breeding is most extensively conducted does not supply sufficient provender for fattening. Accordingly cattle are transferred from one farm to another, and from one proprietor to another, for this purpose. This takes place through the medium of *lean stock markets*. Cattle here come from different points, are associated closely for a time, and then dispersed to other places. This is a most potent means of spreading infectious disease.

Conveyance.
Markets.
Means by which infectious disease may be spread.

4. *Conveyance* from the place of breeding or fattening to the place of consumption. This again involves change or changes of owners, market or markets (*fat stock markets*), mixing, dispersing, and association. No better means could be devised for spreading infectious disease than the series of changes—forming and splitting up of flocks, herding, driving, and markets, which occur as cattle pass between the breeder and butcher; and even here the danger does not end, for after slaughter and quartering there remain the skins, horns, and offal, which may contain the germ of infection, and which are subject to sundry changes of hands and place.

Importation.
Markets, &c.
Importation of products.

5. If the supply of any district or country is not equal to the demand, then *importation* becomes necessary; with it markets, changes of owners, &c., &c. Thus disease is brought into a country and dispersed in it. Moreover, for particular industries importation of products may be necessary, affording another channel for importation of disease.

Modes of conveyance may spread infection.

The circumstances above detailed not only facilitate contact of cattle, and so conduce to the spread of disease, but the very means and paths of conveyance impart additional complications, and conveyance by sea, rail and road, through pastures, commons, bye-ways and streets may become the means of sowing disease broadcast over a large area by means of contaminated discharges and dejections.

Dairy use implies herding, stabling, commerce.

The use of cattle for dairy products involves (1) *herding* and the use of common pasturage; (2) *stabling*, more particularly in towns in this latter case overcrowding and sundry unsanitary conditions may prevail); (3) *buying and selling*, importing and exporting.

Draught use implies movement, association, buying and selling.

These afford facilities for the spread of disease, but in a much less degree than the use of cattle for food. The use of cattle for draught and burden involves—

1. Movement from place to place.
2. Association and dissociation.
3. Buying and selling to a still more limited extent.

Use of cattle for food facilitates spread of disease more than any other cause.

The principal interest to man and the principal modes of extending infectious disease attaches then to the use of cattle for food, and this it is that in Europe at once stimulates—

1. The great traffic in cattle.
2. The easy spread of disease.
3. The stringent regulations to prevent the advent and spread of disease into any territory.

India, contrasted with Europe.

India presents us with an exact contrast to the state of matters in Europe. Here the uses to which cattle are put are in order of importance:—

1. Draught for agricultural purposes.
2. Draught and burden for purposes of conveyance.
3. Milk and dairy products, butter, *duhee*, and ghee.
4. Human food.
5. The only products used are, (*a*) skins for leather, (*b*) dung for cooking and *lepôing*.

Cattle used for draught and burden, dairy, food.

Products.

I shall touch on these in their order; but it is obvious that the more exact and exhaustive the information on these heads, the greater the power in prescribing sanitary and preventive measures. The information I possess has been cursorily and incidentally obtained, and is

Information sketchy.

Dr. K. McLeod.

subject to correction; but I could not too strongly urge the necessity of a systematic enquiry into the conditions of existence and treatment of cattle as a necessary preliminary to any action in the matter.

Employment in agriculture.

1. The use of cattle for agricultural purposes involves them in conditions which vary with—

(*a.*) The character of the country, dry or wet, inundated or the reverse,
(*b.*) The kind of crops cultivated, and
(*c.*) The season of the year.

No systematic slaughter.
Demand for cattle less.

It is obvious in the first place that there is no systematic destruction, nor any loss beyond that caused by wear and tear and disease. Demand for new stock will therefore vary with the loss from these causes, and can seldom or never habitually equal the demand when animals are systematically destroyed for food. Supply, which means breeding, movement, markets, importation, &c., will therefore be less. If, however, the traffic in cattle is necessarily less,

Village system.
Promiscuous communication.

the village system which obtains all over the country affords a means of promiscuous and universal communication among cattle.

The cattle of one village are always herded and pastured together, though housed separately. Where large maidans exist between several villages, the herds of these constantly come into contact. During the cultivating and gathering seasons (spring and harvest) the cattle are

Communication perfectly free.

driven along the same roads and paths, and meet in the same fields and bheels. Communication is absolutely unimpeded, and even more so than in Europe, where separate farms impose a sort of isolation. The only isolation existing in India is in inundated districts and tracts during the rains, when every village is an island, and cattle are either housed and fed on rice, straw, or pastured in herds on some pasturage which happens to be above water. A practice

Sending cattle for pasture in herds.

prevails in some places of herding the cattle of one or several villages, and sending them for pasture to some distance when work is not urgent. In other cases the farm of a village or family may be at some considerable distance from the *baree* or home, and at sowing and reaping times the cattle are driven thither and housed together in considerable numbers.

Hâts.

All the buying and selling is done in the *hâts* so numerous all over the country. Cattle are driven to them without rule or restriction, and may be sent to half a dozen different *hâts*, or the same over and over again until they are bought.

Disposal of carcasses.

When cattle die they are thrown into a stream, khal, or river, or upon the open plain. The hide and horns may or may not be removed by moochees, but the carcass becomes a prey to crows, vultures, jackals, and dogs. It is of importance to note that crows and dogs may come in contact with living cattle. Crows frequently settle on live cows and pick their nostrils, ears, or tails.

The foregoing imperfect sketch of the circumstances under which cattle exist in agricultural districts will illustrate sufficiently—

Disease may easily spread, and restriction is a matter of difficulty.

1*st.*—The enormous facilities for the spread of infectious diseases, and

2*nd.*—The difficulties to be overcome in prescribing sanitary restrictions.

Use for burden involves movement, contact.

2. The use of cattle for burden involves—

1*st.*—Constant movement and change of place.

2*nd.*—Various and incessant contact with other cattle.

I need not enlarge on this head, for the facilities which the use of cattle for draught and burden (and in this country they are almost the only beasts of burden) afford for the importation and spread of disease are sufficiently obvious.

Dairy use.

3. The use of cattle for dairy purposes involves in most cases—

Herding.

1*st.*—Herding and common pasturages.

Housing.

2*nd.*—Housing in considerable numbers; both these conduce to spread disease.

Use for food.

4. Cattle are only used for food on a large scale in Calcutta, and places where European troops reside.

Cattle droved.

The animals are recruited from a wide area by agents or drovers, collected into herds driven along roads, and finally sold to the commissariat and to butchers.

Disease by this means may be scattered far and wide.

Hides.

5. The trade in hides is mainly conducted by moochees, and unless the skin is destroyed by some eruptive disease, it matters not whether the animal have died of infectious disease or not. This unrestricted trade in hides may spread the disease.

Dung

Lastly, cow manure, which is believed in cases of cattle plague to contain the contagious principle,—whatever that may be—is, in this country, collected, caked, dried on the walls of houses, and applied to the floors once a day or oftener.

Importance of cattle as food producers.

If in Europe the importance of cattle as an article of food compels the attention of rulers to their diseases and the prevention of them, in this country their importance as the only available means of growing food and conveying agricultural and other products gives this subject a still greater claim to the attention and concern of Government.

III.—The habits, interests, and even prejudices of a population are important considerations in coming to a conclusion as to imposing restrictions which may interfere with either. This is a general principle which I need not illustrate, and only state here for the sake of completeness.* Dr. K. McLeod. Habits, interests, and prejudices of population.

The foregoing heads comprise all the conditions which govern the problem of checking the origin and spread of cattle plague. A thorough knowledge and due weighing of *all* the points which they include is necessary to come to a just conclusion. In this country nearly all the labor upon which the life and prosperity of the natives depend is performed by means of cattle, and it is a matter of the greatest difficulty to adjust the balance between, on one side, the evils caused by diseases, and good to be obtained by restrictive measures, and, on the other, the evils which may be caused by what interferes with habits, prejudices, private interests, nay, the very means of bare subsistence of the natives, so that the greatest good may ensue. Difficulty of the matter of restriction.

The greatest good in this case to be expected is—the greatest possible diminution of the evils of cattle plagues, with the least possible interference with the private interests and industrial pursuits of the people. The greatest good.

B.—I shall now proceed to examine in detail the various sanitary expedients which European nations have adopted to thwart the invasion and spread of cattle diseases, considering in succession the applicability of each to India. Measures employed in Europe.

I.—The measures adopted to prevent entry into the country are— Measures to prevent entry into a country.

(1) quarantine, and (2) inspection. These measures are applicable only to an area of country in which the disease *does not permanently reside*. They do not, therefore, apply to India as a whole, because there is every reason to believe that these diseases do permanently reside within its boundaries. Do not apply to India.

Until we know more of the precise place of origin and laws of progress of these diseases, it is impossible to say whether particular areas, districts, or provinces might be preserved by interrupting the progress of an invading disease.

In Europe the data are clear. Plague is bred in the east and south-east, and marches with the tide of commerce or war, north, south, and west. It is simply a question of special arrangements, special establishments, artificial hindrances to importation and intercourse, until by means of careful inspection the absence of disease has been ascertained, and by permitting time for its development, proved. Europe.

The quarantine rules of Austria and Prussia are very precise and strict. They vary, however, with the actual absence or presence of neighbouring disease. In the latter case, precautions are redoubled, and the period of detention of cattle on the frontier lengthened. In great emergencies importation of cattle or products is altogether prohibited, as in France and Belgium in 1866, and into Ireland and Lewis in 1865. England possesses a natural barrier in the German Ocean, and careful inspection at the ports of embarkation and debarkation, with powers of preventing either, or ordering the slaughter of cattle, are principally relied on. Slaughter of cattle at the port of debarkation, and special foreign cattle markets have been proposed to the same end. It is obvious that all depends on the *perfection* of the means employed both in power and application. Quarantine in Germany. Importation. Inspection. Foreign cattle markets.

In India a *habitual* quarantine system is not indicated, nor indeed practicable; and so innumerable are the paths and channels of communication that habitual inspection is equally impossible. Quarantine not applicable to this country.

Nothing has as yet appeared in the history of these diseases to show where, over the whole country, a line can be drawn, and until a definite place or places of origin can be shown, or a definite line or lines of travel, the idea of quarantine is simply absurd. No line can be drawn.

II.—Measures adopted when the disease has appeared, but not spread widely. Measures adopted on appearance of disease.

(1). *Giving notice.*—This is a matter of primary importance, and absolutely necessary, when it is the duty of the executive to adopt certain measures. It is still more important when these measures are found by experience to be more efficacious when the disease first appears, the cases are comparatively few, and the infected area limited. The notice is to be given by the proprietor of the cattle, or by the attendant or conductor to the police or civil authority of the commune or district. Severe penalties are in most countries of Europe attached to the neglect of this all-important step. Giving notice—importance. By owner or attendant of cattle to police or civil authorities. Penalties.

Neglecting to give notice to district authorities might arise from (1) simple negligence, (2) designed concealment in order that an owner might sell his cattle, or to avoid the trouble and worry of restriction and special arrangements. These motives are of the selfish kind which prompt men to consider their own individual interests before the public weal. The precise nature of the "duty of giving notice" will vary with (1) the circumstances under which notice is expected to be given. It is obviously out of the question to expect that, at any rate in this country, every case of sickness or death amongst cattle should become the subject of formal report. In most countries the matter is left to the intelligence of the inhabitants, who, under penalty which may attach to their neglect of reporting the existence of "the Causes of neglect. Circumstances under which notice should be given.

* A paper drawn up by Baboo H. C. Kerr, and printed at p. 808, gives a good description of the feeling of the people of India with regard to cattle.

Dr. K. McLeod.

Rule in PRUSSIA.

plague," are left to judge of what may appear "suspicious attacks." In Prussia the matter is more rigidly defined. "It is considered suspicious if at any place two beasts died within fourteen days out of a stock of about fifty head, or three or more out of a larger stock." When the plague is known to rage in a neighbouring country or district, notice of the "smallest trace of sickness" is enjoined. In ordinary circumstances, the occurrence of suspiciously numerous cases of sickness or death would justify or suggest giving information: *when the plague rages,* one case of sickness or death would be sufficient warrant for notice.

In ordinary circumstances.

When plague rages.

The area and authorities.

(2). *The area and corresponding civil authorities within and to which notice is to be given.*

Report in ordinary circumstances.

In ordinary circumstances, the Police divisions of a country and the corresponding executive authorities naturally point to the limits and direction within which and to whom notice, information, or report should proceed. Most countries direct notice to be given to the Police or Magistrate of a district. In Saxony notice goes to the Pest Commissioner; in Austria to the Cattle Plague Commission; while in Russia *information is to be given to the heads of villages, through them to the rural police, who transmit to the superior local authorities.*

SAXONY.

AUSTRIA.

RUSSIA.

Report in extraordinary circumstances.

In extraordinary circumstances the country may be divided, as in Austria, into cattle plague districts or special areas with corresponding special officials to whom notice is to be given. In England the duty of giving notice is left to the sense of the people, and the Veterinary Surgeon or special Inspector will be the first to obtain it; thence the information proceeds to the civil authorities (Magistrates) or to the Privy Council.

ENGLAND.

The purpose of giving notice.

(3). *The end to which the giving of notice contributes.*

Information.

Investigation.

Special agency.

Whatever that end may be, whether (*a*) for mere information, (*b*) for ordering investigation, (*c*) for appointing special agencies or arrangements for treating the sick cattle or exterminating the disease, the importance of obtaining the earliest information cannot be overrated. In this country, most commonly the disease has gained complete possession of a district or sub-division, or is actually on the decline, before the civil authorities are aware of its existence, and I am satisfied that many an outbreak occurs which is not heard of at all. It is thus impossible to trace the rise and progress of the disease, or to bring special investigation or treatment to bear upon it until it has acquired such a hold of a large area that it is next to impossible either to find out whence it came and how it proceeded, or to extinguish it, or limit its progress. In Veterinary Surgeon Thacker's reports on the murrain of Madras, several instances occur of his being informed of a disease among cattle in a certain locality, and finding on proceeding there that it had passed away! Many obstacles exist to receiving early notice of outbreaks in this country, principal among them—1—the apathy, suspicion, and prejudice of the people: 2—the absence of that governmental or police discipline which exists in countries of the continent of Europe: 3—the small number of civil officers compared with the vast population: 4—the large areas of districts: 5—the want of public feeling as opposed to private selfishness on the part of landholders.

Delay in India.

Consequence of delay.

Madras.

Obstacles to receiving early notice.

Early information particularly necessary in India.

Channels of information.

If anything is to be learnt or done with reference to cattle plague, and in this country the plan of action remains to be determined on the basis of the behaviour and nature of the disease, early information is a *sine qua non.* The channel of information would be—1—the heads of villages or zemindaries: 2—the Police: 3—the Magistrate.

Inspection.

2. *Inspection.*—This involves a special skilled agency, and whereas the last paragraph described a spontaneous system of information proceeding through the ordinary paths of official communication, or received by a special individual or department, this contemplates a definite means of seeking for information. The latter may or may not be associated with the power of ordering measures either already laid down by law or devised to meet circumstances as they arise.

A voluntary seeking of information.

Coupled with authority to act.

ENGLAND.

Inspection the principal agency employed.

In England inspection vested with powers defined by Act of Parliament and orders in Council is the chief means employed against the cattle plague. Inspectors appointed by the Clerk of the Council for the Metropolitan Police district, by the Justices for petty sessional divisions, Mayors of boroughs, &c., are entrusted with powers of visiting, inspecting, killing, disinfecting, secluding, &c. These Inspectors are in most cases Veterinary Surgeons.

PRUSSIA.

Inspector of sick and sound separately employed.

In Prussia an Inspector of sound cattle and a Superintendent of sick cattle are appointed, who, under the direction of the civil authorities, examine cattle sound and sick, and carry out the laws and regulations defined by Government.

AUSTRIA.

Inspectors.

Guards.

In Austria local Inspectors are appointed for examining herds, issuing passports, examining cattle, granting certificates, and in addition "guards" are entertained for carrying out quarantine and other sanitary regulations.

FRANCE and BELGIUM.

In France and Belgium inspection is performed by the Police, assisted by Veterinary Surgeons.

RUSSIA.

In Russia, also, the Police and Veterinary Surgeons are associated in the duty of inspection.

SAXONY.

In Saxony the Police and Pest Commissioner or Commissioners are the active agents in investigating disease and applying remedies.

Special skilled agency employed in all countries.

In every country special skilled agency is thus recognised and employed for the two-fold purpose of investigating diseases, and directing the application of remedial measures.

Dr. K. McLeod.

These are the two main objects of special skilled agency, and the amount of such agency will depend on the circumstances of the country or time. It is evident in the first place that the agents must be competent, that they should possess a sufficient knowledge of cattle diseases and their treatment, so as to be able satisfactorily to investigate and describe the one and apply the other: 2*ndly*, that they should be vested with certain defined powers of interference, or better perhaps, should, as skilled advisers, be able to command and put in motion the ordinary civil authorities; and 3*rdly*, that when disease abounds their number should be increased.

According to circumstances.

Must be competent men.

Vested with powers or able to command authority.

Increased when disease increases.

In this country, except the employment of one Veterinary Surgeon for a presidency or province, nothing in this direction has yet been done: yet seeing that little can be expected from the intelligence or public feeling of the inhabitants, and that already existing establishments have duties enough and to spare assigned to them, special agency is peculiarly indicated.

Special agency necessary in India.

If anything is to be systematically learnt or done with reference to cattle diseases, the whole time and attention of qualified men is needed, and as yet such men cannot be found. The experience of Madras proves that one man's services are utterly inadequate to the demands of an extensive area. All other countries have their Veterinary Surgeons: in this there is no native who has the smallest pretension to a scientific knowledge of the diseases of cattle, and European Veterinary Surgeons are few and their services expensive. The proposal of Veterinary Surgeon Farrell, which has, to a certain extent, received the practical sanction of Government, to have natives properly instructed in veterinary medicine is therefore a necessary preliminary to any step in the direction of bringing skilled agency, to bear on the investigation or management of these diseases.

Skilled men not to be had.

One man insufficient for a large area.

Natives must be educated.

Proposal of Veterinary Surgeon Farrell.

The experience of England shows, 1*st*, that the earliest notice of the existence of the plague came through Veterinary Surgeons in communication with a special department; 2*nd*, that the most reliable information of its progress, peculiarities, and spread was obtained by the same means; and, 3*rd*, that the incompetence of many of the men appointed, for the demand exceeded the supply, was a most potent hindrance to efficient dealing with the plague. While, therefore, the considerations I have adduced above would strongly point to the advantages of special agency, the absence of suitable agents is the first thing to be taken into account, and until such exist, the ordinary executive police agencies in existence must be employed, assisted by any medical advice which civil surgeons or native doctors can give.

Experience of England.

Notice.

Information.

Disastrous consequence of inefficiency.

Suitable agents must be first obtained.

In Austria both human and veterinary medicine are learnt and practised by the same individuals, and it is worth considering whether our native doctors might not obtain in addition to what they are already taught a sufficient amount of instruction in the diseases of domestic animals to render them capable of employment in cases of emergency, and until a special veterinary department exists, the medical department might, as it has, to a certain extent, already done in the person of civil surgeons, direct investigations, receive and compile reports, and generally fulfil the functions performed by *Pest Commissioners* in other countries.

Human and veterinary practice associated in Austria.

Instructing native doctors in veterinary medicine suggested.

3. *Provisional separation of cattle.*—This measure is adopted previous to the formal examination and identification of the disease, and consists in carefully keeping sick cattle separate from sound.

Provisional separation.

In Prussia the duty is minutely defined. The suspiciously sick are forthwith to be isolated, sound cattle removed, and the stable locked up. No beast is to be used for draught or field work.

Prussia.

In other continental countries similar precautions are enjoined.

When the case of sickness is suspicious, and the system of isolation is practised and enjoined, this precaution is obviously a most necessary one. It proceeds on the assumption that the disease is *infectious*, and the seclusion and separation cannot in this case be too complete.

4. *Identification of the disease.*—It is plainly of the highest importance, as soon as possible, to determine what the disease is, as on this will depend the ordering or not of future measures.

Identification of disease.

Importance.

Accordingly, in continental countries the civil authority or authorities to whom notice is given are enjoined to associate with themselves a Veterinary Surgeon and to proceed to the spot to acquaint themselves with the exact state of matters. Not only must the sick animals be carefully examined, but any animal that has died is directed to be examined, and in Saxony and Austria a diseased animal may be killed for that purpose, or disinterred as in Russia. For identification a skilled observer is obviously required, and the sooner it is done the better. In this country this duty will ordinarily, in the absence of other skilled advice, fall to the Civil Surgeon. In order to assist in this important duty, it is highly desirable to diffuse among officials and population a sufficient amount of information as to the nature and features of infectious or epizootic cattle diseases, to enable them to identify these, and to distinguish what is harmless from what is dangerous as regards other cattle.

Conducted by civil authorities and veterinary surgeon.

Dissection.

Skilled observer required.

Instruction of officials and population.

This is done by concise descriptions appended to most of the instructions issued by European Governments. In this country all that could be done in the circumstances has been already done in the way of disseminating information, and there should be no difficulty in

In European countries.

In this country.

Dr. K. McLeod.

recognizing the nature of epizootics. The instruction of the population in this matter will also materially contribute to stimulate attention and prompt the giving of notice.

Proclamation and report. Warn inhabitants. Acquaint authorities. Warn neighbouring districts.

5. *Proclamation and report.*—The disease identified, the next step is to (1) apprise all the inhabitants of the district of its existence; (2) acquaint the higher authorities; and (3) either directly or indirectly warn neighbouring districts.

When special agencies exist, their attention and services are now put in request.

Special agency. Isolation of sick and separation of healthy. Sick left in their stables. Healthy removed. Disposal of sick. Separation must be complete. Splitting up herds. Difficulty of common pastures.

6. *Isolation of sick and separation of healthy.*—Immediate separation of sick and healthy is the first measure enjoined. In most cases the sick are left in their stables, and the healthy removed elsewhere. This is the rational proceeding, and should be repeated as often as sickness re-appears. The disposal of the sick will depend on the rules in force or the will of the Inspector, Commissioner or Commission, or responsible authority. The separation of the healthy must be complete—separate stables, separate pastures, separate attendants—and, if the herds are large, it is found convenient and useful to split them up into sections completely separate from each other. In a country divided into farms this proceeding is comparatively easy; but where, as in this country, there is a community of pastures, &c., separation must be a more difficult matter. In this case the people must combine to carry out the idea of seclusion of sick and separation of sound cattle. The precise means can only be indicated by one ascertaining the circumstances of the case on the spot. Removing the sick and leaving the sound in their old stables and pastures has been advised and practised, but it only subjects the sound to any contagious influences which may reside in the locality or may have proceeded from the sick.

Removing sick objectionable.

The distance to which the sound are removed will depend on the space at disposal, but the greater it is the better; in Prussia quarantine stables are ordered, to which suspicious cases are sent.

Isolation of infected areas. Sanitary cordons. All communication suspended. A very effectual measure. Sacrifices. Liberty. Commerce.

7. *Isolation of infected areas.*—This is done on the continent by means of sanitary cordons, circles of observation and restriction drawn round infected areas by means of guards, police—military or special—by which *all communication*, except what is absolutely necessary, is interrupted. If this system is possible, and thoroughly carried out until the disease has spent itself in the locality or been otherwise stamped out, nothing can be more effectual, but the sacrifices involved are most serious. Personal liberty is compromised and commerce impeded, because no individual nor article can be allowed to go out of the area nor anything received into it, except what has been deposited by one set of persons and received independently by another. Even clergy, medical men, and midwives must change their clothes and disinfect in passing or re-passing the circle.

Impracticable in India.

Without entering into a discussion, I have no hesitation in saying that this system is perfectly impracticable in this country.

Census of cattle, with occasional inspection. Austria. Census of neighbouring districts.

8. *A census of cattle* is a part of the cordon system and occasional inspection to ascertain that no beast has been removed. In Austria the process of making the census is minutely laid down so as to prevent conveyance of infection from sick to sound; and the census of neighbouring districts is also to be made, so as more efficiently to control the movements of cattle.

Stopping markets and cattle movement. Recommended by English Cattle Plague Commissioners. Applicable to India.

9. *Stopping of markets and all movements of cattle within infected area.*—This measure is a part of the cordon system on the Continent and in England, is left optional with the magistrates of counties in session. It constitutes the principal recommendation of the Cattle Plague Commissioners, after taking minute evidence on the subject from all persons concerned. When cattle are used for food, it is obviously a more severe measure than when they are used for draught or agriculture. I can see no difficulty in prescribing a measure of this sort in this country, prohibiting the driving of cattle to hâts within an infected area during the prevalence of cattle plague.

Purchase of cattle.

If agricultural operations are not in progress, there can be no immediate need for purchasing; and if agricultural operations are in progress, the purchase of cattle to supplant those which die might be managed by a special agency under precautions.

Stopping movement of gharries. Difficulty.

Stopping the movements of gharries, in other words, the conveyance of produce, is a more serious consideration. If boat conveyance is possible, the difficulty is less, or vanishes but otherwise, it becomes a matter of serious doubt whether movements of draught cattle can be, under any circumstances, prohibited in India without prejudicing the interests of the people to an extent not compensated by the saving of cattle effected. In times of severe disease, however, the routes of movement, the housing of moving cattle, &c., might be so ordered as to minimise the risk of conveying disease. It is also worthy of consideration whether exportation for the purpose of Commissariat supply should not be prohibited from infected areas.

Precautions. Commissariat supply.

Defining the infected area. Germany.

For the purpose of this and other measures, it is of primary importance to *define the infected area.* In Germany it is accurately laid down—a radius of three German miles from the centre of infection. The accuracy of definition will obviously depend on the accuracy of information, and the infected area should at the least contain all the seats or centres of disease. If the area coincides with the ordinary police divisions it simplifies the matter considerably; but the disease may prevail over portions of two adjacent pergunnahs or districts, in which case a special definition will be necessary.

Special definition of area

Dr. K. McLeod.

10. *Slaughter.*—The rationale of this measure is, that by destroying all the sick and suspicious cattle the contagium or contagious principle of the disease may be summarily got rid of. It is the sharpest, and in certain circumstances the most efficient, arrow in the quiver of remedial measures. Its object is by the voluntary sacrifice of a few beasts to save a district, province, or country from being universally seized on by the plague. The laws of some countries are very pronounced. The Austrian regulations put the matter in a clear and sensible light.

Slaughter; rationale. Efficiency of this measure. Object. Austria.

"The efficient means of quickly annihilating the plague in a locality are various, according to the greater or lesser spread of the malady at the time of its first appearance. If the result of the recent census of live-stock shows that only a few cases have sickened with the malady in the place whence no further spread abroad is to be apprehended, and that consequently the plague may be expected to cease there by removing quickly the diseased and suspected beasts from the place, and proper cleansing of the stables, then it will be expedient to kill all such beasts, or, as the saying is, to *use the club.*" Prussia says:—"It is especially of the utmost importance, and is most sure to contribute to the prompt extinction of the plague, that every beast attacked at the very commencement of the malady be forthwith killed and put away, without taking too much trouble in examination in the quarantine stables." Saxony, France, and Belgium proceed on similar principles.

Circumstances in which slaughter is advisable. Prussia. Saxony, France, and Belgium.

In England Inspectors are empowered to "enter and inspect all premises within their district in which any animal (including neat cattle, sheep, goats, and swine) may be found, to seize, slaughter, and bury animals diseased, and to disinfect the premises, and to order the separation of animals suspected of being diseased."

England.

From those extracts the circumstances under which slaughter is either necessary or desirable will be easily seen.

1. The disease must be *an infectious disease, not developed in the locality, nor due to conditions permanently or even temporarily resident there.*

Disease must be infectious.

2. The area infected must be limited, and the number of animals affected (sick) or which have come in contact with these (suspected) few.

Area must be limited.

3. All the animals capable of imparting infection (sick *and* suspected) must be slaughtered.

Sick and suspected must be killed.

4. All other means by which infection may be spread (hides, horns, offal, dung, litter, fodder, halters, stables, &c.) must be destroyed or disinfected.

Hides, horns, &c., must be destroyed.

5. All other means (isolation, separation of sound cattle, &c.) for preventing the spread of infection must be simultaneously employed.

Other measures simultaneously adopted.

By the observance of *all* these precautions the contagium may, and often has been destroyed, and a large loss of cattle saved. After the disease has extensively spread, and numerous centres of a large area have been developed, destruction of cattle becomes a measure of extremely doubtful propriety.

Circumstances in which killing is of no use.

Even in Austria this is admitted, and in Aberdeenshire in 1865 this measure was unsparingly adopted, with no satisfactory result. In the Netherlands an official report states that slaughtering will not always be sufficient to eradicate the disease, as by this means no recovered animals, whose value, as not liable to a second attack, is so much greater, remain; killing is, however, recommended when the disease first appears, and cases are few.

Value of recovered cattle.

In Russia, Bavaria, and districts where cattle plague is habitually or frequently present killing is not practised.

Russia. Bavaria.

Where cattle are used for food, and means of rapid conveyance are available, killing can be more extensively practised without loss, by establishing a system of dead meat markets.

Dead meat markets.

Looking to the circumstances of this country, and the uncertainty as to the origin of the disease, killing, as a measure for general or even occasional adoption, cannot be thought of.

Killing not advisable in India.

Perhaps, when the behaviour of the disease has been better ascertained, killing may be practised when its appearance at a new centre can be promptly ascertained.

11. *Burial.*—This is prescribed in the regulations of every country.

Burial.

(*a.*) The *subjects* to be buried are all cattle dying of the plague and the sick slaughtered. The *suspected* are permitted to be used as butcher meat under certain precautions.

Subjects to be buried.

(*b.*) The *place of burial* is specially pointed out in the Prussian regulations. It is to be a piece of waste land, far removed from cattle and human habitations, and, if possible, adjoining the quarantine stables. A piece of land may be taken up for the purpose by the authorities, compensation being afterwards paid to the owner. This place is to be railed in, and not used for any other purpose for two years.

Place.

(*c.*) The *mode of burial* is also fixed. Animals must be conveyed, not dragged, to the place of burial. The conveyance must be drawn by horses. The graves must be at least six feet deep, the carcasses are to be covered with quicklime, the skins slashed, and all the earth removed out of pits put over them.

Method. Conveyance.

(*d.*) The *persons who bury* are not to have any communication whatever with live cattle, and are to be specially retained for that purpose.

Persons who bury.

Dr. K. McLeod.

This precaution of burying the dead of cattle plague is of the last importance, and should be scrupulously enjoined in this country, where carcasses are either thrown into a river or left to be devoured by animals. The contagium in either case is sown broadcast. It is hardly necessary to add that neither the meat nor produce of diseased cattle should be in any way used.

Disposal of dung. Buried.

12. *Disposal of dung.*—The dung of infected stables is directed to be buried in deep pits. This is a point of great importance, as the dung is believed to contain the contagium of the disease.

In India.

It is more difficult to deal with the dung voided on pastures; and in this country, where cow-dung is collected and used for plastering walls and floors, the difficulty of avoiding this source of infection is greater. The Austrian regulations direct that the dung of sick animals in transit should be buried.

Confining sick in stables.

If the sick are confined in stables on the earliest appearance of symptoms, the difficulty of disposal of dung is much lessened.

Disposal of fodder, &c. Burnt. Pastures.

13. *Disposal of fodder and litter.*—The discharges escaping from the eyes, nostrils, and mouth contain the contagium, and infect the straw, &c., in the stables. This should be burnt. When discharges fall on pasture no remedy exists, except to confine the sick and remove the healthy.

Halters.

14. *Halters and stable gear* should either be burnt, if of small value, or disinfected, if more valuable.

Burnt or disinfected.

Stables.

15. *Stables* are directed to be carefully disinfected, and kept empty for periods varying from two weeks to two months, in different countries.

Dogs.

16. *Dogs* are to be tied up, or killed if ownerless.

Poultry.

17. *Poultry* should be confined, and by no means allowed to frequent stables.

Sheep, goats, &c. Separated.

18. *Sheep, goats, swine, &c.*, are to be carefully kept apart from diseased cattle, because they are not only capable of taking the cattle plague themselves, but are still more so of conveying the disease from sick cattle to sound.

Duration of restriction. Three or four weeks after last fatal case.

19. *Duration of restrictions.*—It is usually considered necessary to continue the foregoing arrangements and restrictions for three or four weeks after the last fatal case.

Conditions under which foregoing measures are effective.

The foregoing measures form items of a complete system by which it is endeavoured to nip an outbreak of imported disease in the bud. This has repeatedly been done in France and Germany. In order that it may be done, it is necessary (*a*) that information should be promptly and precisely given; (*b*) that the measures to be adopted should be exactly laid down; and (*c*) that the agency by which the measures are to be carried out should be *defined* and *available*.

Inoculation and medical treatment.

I have not in the foregoing said anything of inoculation or medical treatment, because neither of these means fall under the scheme of isolating and destroying all the existing contagium; they rather tend to its dissemination.

Proclamation of sanity of area.

Finally, as an infected area should be proclaimed, so its freedom from disease should be officially made known.

Measures adopted when disease has spread.

III.—Measures adopted when the disease has spread extensively over a country.

Surrounding sound localities. Included sound localities.

Hitherto I have assumed the existence of one or a few centres of infection and a small area; now I contemplate a multiplicity of centres and an extended area. The subject may be looked at in two ways; (1) the infected area may be considered with relation to surrounding healthy places; and (2) included sound areas may be considered with reference to the surrounding infected area.

Export prevented.

1. In order to prevent spread beyond the area, it is necessary to hinder the export of contagious material by cattle, cattle products or other agencies to surrounding healthy localities. The same method, already indicated, but on a larger scale, will be necessary; more particularly separation of sound from sick, burial of litter, and destruction of contagium in every form, together with as much limitation of the movements of men and cattle as possible.

Objects to be attained within infected area.

2. Within the infected area, three objects are of paramount importance; (*a*) to save as many sound cattle as possible from infection; (*b*) to procure the recovery of as many sick as possible; and (*c*) to get over the disease as quickly as practicable.

Killing improper.

By common consent, killing is considered improper in such circumstances. If sick and suspected animals are all killed, the destruction of cattle must be enormous, and the prospect of gaining a greater advantage to compensate, namely, immunity of a large area from attack, becomes less in proportion to the extent of the area already infected. The only slaughter at all justifiable in such cases is the slaughter of moribund animals, in order to get rid more quickly of a loathsome, pestilent object.

Killing moribund cattle.

Strict measures of isolation necessary to save included sound area.

If any village, farm, or section of the infected area remain healthy, efforts must be redoubled to prevent the entry of contagium. In such circumstances the most strict and severe cordon is appropriate and necessary, coupled with precautionary measures, disinfection, care-

ful feeding, watering, &c. If a river comes from the infected localities, cattle should not be allowed access to it. Dr. K. McLeod

Measures to be adopted throughout infected area.

Over the infected area, strict separation of sick and sound, isolation of sick, parcelling out of herds, destruction of contagium, and disinfection are the main points insisted on.

Medical treatment

Medical treatment now obtains sanction with the object of preserving as many alive as possible; but it should, if possible, be applied in special hospital stables carefully isolated. The function of medical treatment refers to individual cases, and it cannot contribute in the slightest degree to the limitation or prevention of the plague generally. On the contrary, as animals retain during convalescence the power of imparting disease, medical treatment, as a mere sanitary measure, rather tends to spread contagious disease. It is, therefore, either not directed, or positively prohibited, as in Prussia. This truth cannot be too strongly stated, namely, that *medical treatment rather favours than hinders the spread of cattle plague, and that its employment must be accompanied with the strictest sanitary precautions.*

Must be associated with other sanitary measures.

Inoculation.

Inoculation is also mentioned in the Austrian despatches as a means of getting quickly through an outbreak of disease within a certain area; but as this method multiplies and increases contagium, precautions against the spread of disease beyond the limits of the area must be re-doubled.

Must be associated with sanitary precautions.

When plague spreads extensively over a country, alarm is wont to spread along with it. People are willing to undergo any sacrifice or endure any restriction to get rid of it. Special agencies are then largely entertained, and expensive measures or establishments initiated or employed. Yet if the simplest precautions or the most trifling sacrifice were adopted or made on the very earliest appearance of an infectious disease, these measures and agencies would be unnecessary. These diseases never attack a whole herd or stable at once. First one falls sick, then several, then the whole flock. If the first one or first several were carefully segregated, and the sound remainder driven off elsewhere till time and disinfection had done their purifying office, it is hardly possible to conceive that disease could spread over a whole district or province; but in the total absence of all precautions, the wonder is that its prevalence is not even greater than it actually is. Meteorological changes and natural barriers are the principal means as yet available in Bengal to stay these plagues.

Importance of early adoption of measures

IV. Measures adopted in countries when the plague is enzootic.

Measures adopted when plague is enzootic.

In Russia, where cattle plague may be said to be an indigenous disease, the measures adopted are, in short, as follows:— Russia.

1. Early information through police: penalty for neglect. Information.
2. Examination by civil authority, assisted by veterinary surgeon, and report of nature and cause of disease and measures used to arrest it. Examination.
3. Census of cattle. Census.
4. Separation of sick and healthy. Separation.
5. Special hospitals for sick. Special hospitals.
6. Special place and precautions for sale of cattle. Place of sale.
7. Disinfection of harness, stalls, &c. Disinfection.
8. Separate attendants for sick and healthy. Separate attendants.
9. Smearing cattle with tar to prevent conveyance of contagium by flies. Smearing with tar.
10. Burial of dead and cutting up of their hides. Burial.
11. Prohibition of trade in products (meat, hides, milk, tallow, &c.) Products.
12. Burning of dirt, litter, dung, &c. Dirt, litter, &c.
13. Confining dogs, cats, and fowls. Dogs, cats, &c.
14. Appointing special by-roads for the use of cattle *en-route*. By-roads.
15. Attention to the food of cattle; hay damped with warm water, to which salt is added. Food.
16. Placing setons in the dewlap. Setons.
17. Medical treatment. Medical treatment
18. Precautions against possible infection of attendants. It is stated that human beings may, in various ways, become infected by the Siberian plague. Siberian plague
19. Prohibition of using the meat, milk, &c., of diseased animals. Meat, &c.

The following letter, which, from its interest, I transcribe in full, details the measures adopted in Bessarabia, where the disease is permanently prevalent. Bessarabia.

Consul-General Murray *to the Earl of Clarendon,—Odessa, dated 8th January* 1866.

The following important information respecting the cattle plague has been kindly supplied to me, in answer to a series of questions I addressed to Prince Manoakbeg and the principal landowners and cattle breeders of Bessarabia. Source of information

* * * *

Dr. K. McLeod. Plague permanent. Cause and cure unknown. Disease contagious. Treatment futile.

1. The Bessarabian cattle owners and breeders state that the plague during the last few years has been permanent in New Russia. It exists sometimes in one district, sometimes in another, of that vast country. Up to the present time nothing is known with certainty of the true cause of the disease, or of the proper means of treatment for its cure. On one point only there exists no doubt,—it is certainly contagious.

2. No remedies which have been yet tried, neither fumigation, friction, bleeding, nor medicine, have met with enough success to warrant their recommendation. From time to time a few beasts recover, and each person attributes their cure to the remedy he has employed; but general experience has not confirmed such assertions in any case.

Vaccination.

3. One opinion only appears to merit serious attention, and is now under anxious consideration. That opinion is in favor of vaccination, which the imperial Government has undertaken to introduce throughout the infected districts by competent veterinary surgeons employed for that purpose. Time can only decide whether vaccination will afford a sure protection from the disease, but at present it seems to promise more satisfactory (*sic*) than anything else which has been tried.

Communication prohibited.

4. Effective means may be taken to restrain the plague from spreading. For this purpose it is advisable, as soon as it is found to exist in any district, that all communication with other places should be strictly prohibited.

Burial of carcasses with hides on.

5. Dead animals should be buried as soon as possible, and in no case should it be allowed to skin them previously for their hides. They should be buried in the state they die.

Separate drinking troughs.

6. Great care should be taken not to suffer diseased beasts to drink out of the same troughs as healthy ones.

Separation of sick and healthy. Removal of healthy.

7. Healthy cattle should be separated at once from the diseased; and immediately any beast falls sick among them, the healthy cattle should be taken away and transferred to other pasturages. *By these means large herds have been entirely saved.*

Theory of origin.

8. These facts are indisputable; but there is still to be mentioned a probable theory as to the origin of the malady.

[This theory attributes the origin of the disease to "the long journeys during the great heat of summer across arid steppes, where no pasture nor wholesome water can be found." C. P. C.]

9. This seems to be really the sole cause of this terrible disease, and the wagons returning to their several houses spread it throughout the country. * * * *

Summary of system.

The most important features of these rules are—

1*st.*—That slaughter is not recommended, nor adopted.
2*nd.*—That separation of sound cattle and isolation of sick are found to be the best measures.
3*rd.*—That medical treatment is adopted.
4*th.*—That inoculation is hinted at.
5*th.*—That much stress is laid on disinfection.
6*th.*—That the food and water of cattle are made subjects of care and attention.

C. Special measures.

Instruction of population.

I. Instruction of population.—If the people of a country at large are informed of the nature of the disease and impressed with the reasons on which restrictions, which may be irksome, are founded, a most important aid is furnished in the adoption of sanitary measures. An ignorant, resisting people will abort the best devised and most carefully applied means, and the less the aid which may be expected from the owners of cattle, the more elaborate and powerful must be the agency to apply sanitary measures, and the more stringent the penalties for this breach. The importance of disseminating information has been already recognized in Bengal.

Indemnification. Circumstances in which made.

II. Indemnification.—In countries where cattle are slaughtered by order of the civil or other legal authorities, the State pays a fair sum of money to indemnify particular cattle owners for the loss of cattle or property destroyed. As this contingency is not likely to occur in India, I need not enter into particulars as to the mode of estimating the amount of loss incurred. State assistance to ryots in times of severe plague, to enable them to purchase new cattle, is a separate question, not entering into a scheme of sanitary interference. Loans for this purpose are obtained from zemindars and mahajuns at great rates of interest. A system of loaning on reasonable rates in such circumstances would be a boon to cultivators; but other considerations foreign to the scope of this paper enter into this question.

State assistance for purchase of cattle.

Loans.

Disinfection; object.

III. Disinfection.—This process endeavours to destroy artificially the contagium or contagious principle of disease. This is its primary object. A secondary purpose of disinfection is to destroy organic decomposing matters and products of decomposition, which are found by experience to favor the development, or increase the virulence of the contagium. It is an imitation of the natural process by which, through ordinary agencies, certain deleterious organic matters are reduced to a harmless inorganic condition. Several of the measures already discussed are in reality processes of disinfection; slaughter, burial, and burning are examples.

The two principal agencies of disinfection are heat and chemical agents, and heat in the form of fire or boiling water is probably the best disinfectant, and may be used under the following circumstances :— Dr. K. McLeod. Agencies—heat, chemical agents.

(*a.*) All valueless articles, or articles difficult of disinfection by other means, should be burnt. Contaminated straw, litter, hay, mats, ropes, bamboos, &c., should unceremoniously be disposed of in this manner; and in this country infected stalls and stables made of matting and bamboo (kutcha) should be also burnt. They are of little value, and can easily be replaced, while their disinfection otherwise is difficult. Valueless articles to be burnt.

(*b.*) Clothing which may be of some value, and has been worn by attendants on sick cattle or others coming in contact with them, may be disinfected by boiling in water. If of little value, it should be burnt. Clothing boiled.

Chemical Agents.—The subject of disinfection by chemical agency was carefully and scientifically investigated by Dr. Angus Smith and Mr. Crookes for the English Cattle Plague Commission. The latter studied also, experimentally, its application to cattle plague. The report of Mr. Crookes is most interesting and important. After passing in review the various agents available for disinfection, he remarks, that "the choice is therefore limited to the oxidizing disinfectants—chlorine and ozone, and to the antiseptics—sulphurous and the tar acids"—(carbolic and cresylic). The experiments and experience of Mr. Crookes led him to pronounce strongly in favor of the latter class of agents as the most efficient means of destroying the contagium. He details several experiments on farms, from which it appears clear that a free use of sulphurous and carbolic acid does exercise a most potent influence in destroying or rendering inert contagious material. Chemical agents. English observers. Best agents. Sulphurous and carbolic acid.

The directions issued by the Cattle Plague Commission, founded on these observations, are, in short, as follows :— Directions.

1.—*Cleansing stables, sheds, markets, slaughter-houses, &c.*

Wash wood-work with boiling water containing a wine-glassful of carbolic acid to a gallon. Wood-work.

Lime-wash walls, &c. Use freshly burnt lime, and add one pint carbolic acid to each pailful of wash. Walls, &c.

Cleanse floors with hot water, and sprinkle with undiluted carbolic acid. Floors.

Close the house and burn sulphur inside for two hours, men and cattle to be removed meanwhile. One pound sufficient for ten or twelve stall sheds. Fumigation.

These measures to be used after every evacuation, or periodically.

2.—*Cleansing wagons, trucks, &c.*

Scrape boards and burn scrapings; wash with boiling water and soda one pound to a pailful, then with chloride of lime or carbolic acid, as in 1. Wagons, &c.

3.—*Disposal of manure or litter.*

Burying or burning best, having previously watered with carbolic solution. It may be ploughed in, or covered with earth for agricultural use. Implements, &c., cleaned and washed with solution. Add one pint of carbolic acid to every 100 gallons of liquid manure. Manure, litter, &c.

4.—*Disposal of carcasses.*

Bury six feet deep, covering with quicklime and carbolic acid. Carcasses.

5.—*Disposal of blood, offal, hides, &c.*

Bury blood and offal, having mixed with carbolic acid; wash hides with carbolic solution, or soak in solution of chloride of lime, after covering with salt for twelve hours. Blood, offal, hides.

6.—*Precautions to be taken by butchers, &c.*

Should not approach healthy beasts in infected clothes; should wash and dip boots in carbolic solution; sprinkle their clothes with the same. Butchers.

Clothes and baskets may be steamed or placed in boiling water.

7.—*Further disinfecting measures.*

Wash cattle with mixture of one pound soft soap, one wine-glassful carbolic acid, and one gallon of warm water. Washing cattle.

Sprinkle floors, walls, &c., with undiluted carbolic acid. Sprinkling floors.

The smell of carbolic acid should be sensible over farm-yards, stables, &c. Smell of carbolic acid.

Cattle may lick carbolic acid without danger. Cattle may lick acid.

Clothing, baskets, tools, utensils, &c., may be fumigated with sulphur. Clothing, &c., fumigated.

The utmost cleanliness should be always preserved. Cleanliness.

In this country destruction by fire will be the most appropriate and effectual disinfecting agency, as the infected articles will, in most cases, be of little value and easily replaced. Next Destruction of valueless articles.

Dr. K. McLeod. to it will come sulphur fumigation, sulphur being obtainable in every bazaar. Carbolic acid, which is considered the best antiseptic, is expensive, and not easily obtained; but tar may be used for many disinfecting purposes, as it is in Russia.

PRUSSIA. In Prussia fumigation by chlorine is prescribed, but its evolution is more difficult and dangerous, and its action not so effectual. It belongs to the class of oxidising agents which are found to attack the contagium of the disease less promptly and efficiently than the antiseptics.

FRANCE AND BELGIUM. In France and Belgium carbolic acid is employed similarly as in England, and the stamping out of two outbreaks during the prevalence of cattle plague in England was thought to be materially assisted by the liberal use of carbolic acid.

Having pointed out the best disinfectants known, it is unnecessary to enumerate others recommended by other countries.

Inoculation and vaccination. *IV. Inoculation and vaccination.*—The aim of inoculation is, by artificially inducing an attack of disease, to render the subject of experiment not liable to another of the same malady. The

Reasons. well-known peculiarity of eruptive fevers rarely to attack a man or animal twice is turned to account, and the less fatal form of a disease communicated artificially in this manner is the

English experience. main reason of the measure. English experience proved both vaccination and inoculation a complete failure. Vaccination, which was tried on a very large scale, proved utterly useless as a protective, and the mortality from inoculation was as great as from the disease naturally

RUSSIA. communicated. On the Continent, especially in Russia, experience has been more favourable. It has been found possible, either by selecting a mild form of disease to inoculate from, or

Varying results. by mitigating the severity of the virus by successive transmissions through animals, to induce a mild disease whose mortality is only six to ten per cent. This result is not, however, uniform, and too mild a manifestaion is found not to be protective: that is to say, animals which sickened only very slightly from inoculation, contracted the disease when exposed to natural infection.

Experiments required Before men entertaining the expediency of inoculation in this country, it is necessary to ascertain by experiment—

(*a.*) Whether a mitigated form of *gootee* and *puschima* can be obtained.

(*b.* Whether the one disease, either naturally contracted or communicated by inoculation, is protective against the other.

(*c.*) Whether the induced mitigated form of disease is efficiently protective against either or both forms of disease (*gootee* and *puschima*).

The result of these being favorable, other questions arise. (*d.*) Whether different localities, seasons, periods, or epizootics modify the results. Presuming that such a mitigated form of disease may be obtained (of which I am far from sanguine) with a mortality of, say, five per cent., very serious questions follow:—

Universal compulsory inoculation. 1. Are all the cattle of Bengal to be compulsorily inoculated? Is a vast establishment to be spread over the province, five per cent. of all cattle to be voluntarily sacrificed, a serious waste of the time of the agricultural class, and probable interruption of their labors, to be incurred in consequence of the sickening and temporary disablement of their cattle, and the habits and prejudices of a very large section of the community rudely interfered with, and all this for the sake of the few hundred or even thousand cattle that are yearly carried off by cattle plague? To this question there can only be one answer,—an emphatic negative.

Indiscriminate inoculation. 2. Are the people to be permitted, if they wish it, to practise inoculation, when, where, or how they like? This would amount to nothing short of voluntarily spreading the disease abroad.

Inoculation with precautions. 3. Are the people to be permitted, under proper inspection and precautions, to protect their cattle? Unless the inspection is strict, the precautions sufficient and thoroughly carried out, the effect of such a system would be the same as the last.

Establishments for inoculation. 4. Are properly trained establishments to be placed in every district in which inoculation may be performed under proper rules and restrictions, the cattle being voluntarily brought by owners for the purpose? This system obtains in Russia. Unless the people were convinced of the expediency of the system, it is highly improbable that they would voluntarily adopt or fall into such a system; and the agency required for the purpose presents an insuperable obstacle as yet.

Inoculation in "infected areas." 5. When plague prevails in a certain area, are all the cattle of this area to be inoculated in order to get rapidly over the plague? This is the Austrian system; but unless an efficient cordon were maintained around the area, the measure would only tend to spread disease.

Introduction of system not advisable. It is very evident that the time has not come for the introduction of any system of inoculation into this country, and the slender prospects of much benefit being eventually obtained by its introduction would even contra-indicate the performance of a series of experiments to determine its possibility, which must be on a large scale and involve great expense.

Trade in hides. *V.—Trade in hides, &c.*—If the hides, horns, and offal of animals dying of cattle plague

Burial of products. are buried along with the carcass, there can be no risk of spreading the disease by their means.

In order, however, to prevent any risk which might ensue from carelessness or culpable neglect, it would be advisable to prohibit all export of such products, or dealing in them, from or in infected districts, unless they were thoroughly disinfected in salt, chloride of lime, carbolic acid, and dried in the sun. The systematic poisoning of cattle for the purpose of obtaining their hides, which has recently been brought under notice, is another question of importance, demanding action of another sort, which I need not discuss. It is plain that such poisoning can hardly occur *epizootically*, but must be a more or less constant quantity in districts where such nefarious practices prevail.

Dr. K. McLeod. Prohibition of exportation from infected area. Disinfection. Cattle poisoning.

VI. Penalties.—In all European countries penalties of considerable severity attach to neglect or infringement of the regulations framed for the purpose of checking the spread of cattle diseases. The penalty is always more severe when it can be clearly proved that the spread of disease and loss to the community have resulted from the neglect. The propriety of attaching a penalty to the neglect of regulations of this sort depends upon (*a*) the clearness of the premises and certainty of the facts on which the rules are founded; (*b*) on the character of the people; and (*c*) on the kind and amount of loss to the community which such neglect may entail.

Penalties. Circumstances on which the propriety of imposing a penalty depends.

D. Conclusion.—Of the various sanitary measures passed under review in the foregoing, those which in the present circumstances seem most suitable to this country are as follows :—

Conclusion. Summary of measures applicable to this country.

1. Gathering, systematizing, and publishing information.
2. Inspection when disease has been reported.
3. Duty of giving notice inculcated.
4. Skilled examination of disease and narratives by competent persons of its nature and behaviour.
5. Proclamation of infected areas.
6. Isolation of sick and separation of healthy.
7. Stopping markets and cattle movement in infected areas.
8. Burial of carcasses after scoring hides.
9. Disinfection, including the destruction of dung, fodder, &c.,—anything by which disease may be spread.
10. Medical treatment, combined with sanitary precautions.

When information has accumulated and experience has been enlarged, the course of preventive or restrictive action will become more definite and clear. Meantime, enough of experience has been gained to indicate what owners of cattle must do and avoid; and if that is clearly set forth, and civil authority brought to bear strongly in support of directions and restrictions, good must accrue in the prevention of disease and saving of stock.

From A. MACKENZIE, Esq., *Officiating Junior Secretary to the Government of Bengal, to the Secretary to the Government of Fort St. George,*—(*No.* 2123, *dated* 9*th October* 1869).

BENGAL. A. Mackenzie, Esq.

I am directed to request that you will, with the permission of His Excellency the Governor in Council, favor the Lieutenant Governor with any information that may have been laid before your Government, showing how Act II of 1866, for the prevention of the spread of disease among cattle in the Madras Presidency, has worked in practice; and especially as to the mode in which a class of men sufficiently trained to act as hospital pound-keepers has been provided.

2. It is contemplated to introduce a similar measure in Bengal, and the Lieutenant Governor is desirous of learning whether the experience of the Madras Government can suggest any modifications in the law there in force.

From J. W. DALYELL, Esq., *Acting Secretary to the Government of Madras, to the Secretary to the Government of Bengal,*—(*No.* 3198, *dated* 16*th December* 1869).

MADRAS. J. W. Dalyell, Esq.

In reply to your Junior Secretary's letter, dated 9th October 1869, No. 2123, I am directed by the Right Hon'ble the Governor in Council to inform you that Act II of 1866 has not as yet been extended to any district of this Presidency.

2. You will observe from the papers noted in the margin, copies of which are enclosed, that Mr. Veterinary Surgeon Thacker, who is now engaged in treating cattle disease as it appears in various parts of the Presidency, is of opinion that the enactment would need revision before being put in operation, and that the Board of Revenue consider that recourse to law is not at present expedient or necessary.

Proceedings, dated 23rd November 1868, No. 2922.
Proceedings, dated 24th June 1869, No. 1790.

Baboo Hem Chunder Kerr.

Notes by BABOO HEM CHUNDER KERR *on the Diseases of Cattle known to the Hindus.*

Some Orientalists are of opinion that the early Aryans of India were a nomadic race. Whether so or not, certain it is that the Hindus of the Vedic times were peculiarly attached to their cattle, and in their sacred hymns constantly prayed for the safety and prosperity of their herds. The valleys of the Indus and the Ganges offered peculiar facilities for the grazing of cattle, and the people devoted their entire attention to their fields and pastures. They owned large herds, and, being divided into small tribes or clans, extensively indulged themselves in robbing each other of their bovine treasures. The Mahábhárata contains notices of many such marauding expeditions, the most remarkable being that of the Kurus in the pastures of the King of Viráta.

The breed of cattle which they owned was, I believe, the large-humped variety, with ascending curved horns and deep fringed dewlap, for the bovine species has been defined in ancient books as "a four-footed, humped animal, with curved horns and a large dewlap." The bulls on Bactrian coins of the 3rd century, B. C., are likewise humped. No mention occurs anywhere of the humpless ox, such as are depicted in ancient Egyptian paintings, or represented in Assyrian sculptures. I believe, therefore, that they were unknown, particularly as the modern breeds in the different parts of India are invariably all humped, and a humpless ox sounds in the ears of ordinary people as strange as a trunkless elephant.

The people at the time were fond of beef, and most of their ancient rites and festivities were celebrated over the slaughtered cow. I have never met with any word equivalent to the Grecian holocaust, but the sacrifice of ten to twenty head of cattle at a time was, I find, common, and a supply of beef was deemed an essential requirement even for the dead in their journey from this to a future world. A slaughtered cow was, accordingly, put on the funeral pyre to be burnt with the dead.

The religious reforms effected by Buddha brought on a change. Sacrifices of all kinds were forbidden, and the animal which yielded the most valued aliment was, in a manner, gradually raised to the rank of a god; and for the last two thousand years and more the cow has been regarded and worshipped as the earthly representative of the divine Bhagavatí. So great has been the respect paid to the animal, that even its excrementitious secretions are held as pure and holy, and unhesitatingly used by men for the cure of various diseases; and impure things are purified by their touch. The numerous rites and ceremonies which were formerly solemnised by the sacrifice of the cow have given place to almost equally numerous ceremonies for the adoration of that animal, and almost every month has its stated days when cattle should be relieved from labor, bathed, anointed and worshipped with divine respect. The month of Kártika (October—November) is especially reserved for this purpose, and two grand festivals are held for the adoration of the bovine race. The first is held on the day of the new moon, when all the cows are bathed, decorated with various dyes, and fed with boiled rice and curries, their horn and hoofs being anointed with oil, and sometimes covered with tinfoil. A colossal human figure is also made of dung and worshipped with appropriate mantras and offerings. This is called *Govardhana játrá*. A similar ceremony is also observed on the 8th of the waning moon in the same month, which is known by the name of *gosthástami*, or the 'cattle 8th,' when cows are bathed, worshipped, fed, and circumambulated for the removal of sins of every kind. The figure of dung is omitted on this occasion.

Nor are these observances confined to any particular sect. Hindus of every persuasion, whether Saiva, Sákta, or Vaishanává, are all unanimous on this subject, and the shástras abound in the most exaggerated accounts of the benefits which flow to mankind from this sacred animal. To give to European readers an idea of the extent to which this feeling is carried, I shall give here an extract from the Agni Purána, one of the eighteen great works on which modern Hinduism is based.

"A king, said *Dhanwantari*, should have the *Bráhmanas* and cows cherished. I shall now speak of the means of averting evil. Cows are pure and serve for auspicious omens. All the regions are contained within the cow. By using the urine of this animal poverty is destroyed. Sins are crushed down by using its urine, and scratching its forehead between the two horns. By feeding upon the under-mentioned six good things, *viz.*, cow's urine, dung, milk, curds, ghee, and *gorochaná* (concrete bile of the cow, by some supposed to be a secretion formed in the head) all kinds of inauspicious dreams, &c., are prevented. *Gorochaná* counteracts the operation of poison, and the fear of *Rakshasas*; it procures the enjoyment of heaven. The owner of that house where cows experience any inconvenience suffers in hell. He that gives a morsel to another's cow goes to heaven, and the person who does good to a cow is entitled to the enjoyment of the region of *Brahmá*. From giving away cows, glorifying them, and protecting them, one's race is redeemed from sin. The earth is rendered pure by the morsel of the cow; and by touching the animal all sins are destroyed. The cow's urine, dung, milk, curds, and ghee, the water in which *kusa* or sacrificial grass has been steeped, and one night's fasting will even purify a *swapaka* (a degraded outcast). As to the properties of the cow's urine, dung, milk, curds, ghee and *gorochaná*, they are, as was said by *Mahádeva* in ancient times, the best means of averting all kinds of evils. Feeding for three days successively only upon each of the following things, namely, cow's urine, ordure, milk, curds, and ghee, and

the water in which *kusa* grass has been steeped, is called *Mahásantarpana*. By its means all desires are gratified, and all evils averted. Feeding only upon the milk of cows for twenty-one days successively is called *Krichchrátikrichchhra*. By doing this penance a person is freed from all impurities; he accomplishes all his purposes, goes to heaven, and becomes the best of men. Feeding for three days successively upon cow's urine after it is heated, then for three days upon warm ghee, after that for three days upon warm milk, and then for three days upon air, is a penance called *Tuptakrichchhra*, which is the means of destroying all sins, and of attaining the region of *Brahmá*. By bathing with the urine of cows, living upon the liquids obtained from them, and going about in carriages drawn by those animals for the space of a month, a person will be rendered sinless, and from the region of the cows will ascend to heaven. He that studies the science called *Gomati* enjoys the region of the cows, which is an excellent one, and is delighted with songs, dancing, the *Apsaras*, celestial courtezans, and the *Vimánas* or carriages of the gods. Baboo Hem Chunde Kerr.

"A cow has always a fragrant smell; it has the smell of *Guggula* (a fragrant gum resin, bdellium). The cow is the support of all living creatures, and is an effectual means of averting evil. She is the best of food; she yields the clarified butter for gods, and the means of purity to all living creatures whom she both carries and protects. Cows with their *ghrita*, after it is purified by *mantras*, afford satisfaction to the *Devatas*. They are required at the *Agnihotras* of the *Rishis* and at their *Homas*. Cows are the great refuge of all beings, the purest of the pure, and the greatest of blessings. They form the stairs which lead to heaven; they are to be praised at all times; salutation to the cows; salutation to them, as they are fortunate; salutation to them, as they are possessed of a fragrant smell; salutation to them, as they are the daughters of *Brahmá* and respected; salutation to them, as they are pure.

"The race of *Brahmanas* and that of cows are, in fact, one, although made into two separate races. In the one are the *mantras*, and in the other the articles to be offered to the sacrificial fires. The gods, *Brahmanas*, cows, pious men, and chaste women are the supporters of the world, and, as such, they are greatly to be respected. Wherever the cows drink water, that place is equal to *Ganga* and other *Tirthas*."

Other authorities are equally high-flown and extravagant in their praises of the cow, and quotations may be multiplied *ad libitum* on the subject, but they are, perhaps, not needed.

In the *Smritis* or law books every provision is made for the protection of cattle, and the slaughter of the cow is denounced as a most heinous crime. The feeding of cattle is recommended as a meritorious duty; the cowherd who fails to keep a smoking fire in a cattle shed is condemned to be eaten up by flies in a hill full of such insects; and ample provision is made for pastures. Yájnavalkya says that "either the king or the villagers should always reserve a plot of ground for pasture, and this should be situated between the village and the fields. This pasture should measure a hundred fathoms in extent. In sterile places where land is abundant, two to four hundred fathoms may be so reserved." To prevent the possibility of such grazing ground being sub-divided, Vrihaspati lays down that "pastures, roads, clothes on the body, and artizan's tools are intended for use; they are not liable to partition." Manu is equally precise. He ordains "apparel, carriages or riding horses, and ornaments of ordinary value, which any of the heirs had used by consent before partition, dressed rice, water in a well or cistern, female slaves, family priests, or spiritual counsellors, and pasture ground for cattle, the wise have declared indivisible, and still to be used as before;" IX., 219. This law was strictly observed during the Hindu and the Mahomedan periods, but at the time of the decennial settlement no exception seems to have been made in favor of commons; the whole area of every village was assessed, and consequently they have all been brought under the plough, and the cattle of the ryot is driven to find a scanty and precarious pasturage in fields after the crops are removed. Pasture.

Nor was the attention of the people confined to the comfort of cattle. The animal was carefully studied both in health and in disease, and several treatises were compiled for the treatment of its ailments. The most important of these was that of Sálihotra, from a corruption of whose name the modern farriers are named *Saluters* or *Salutries*. This author lived long before the time of *Dhanwantari*, who himself flourished about six centuries before the Christian era. His work has not come down to us, and those of his successors are not accessible to me. In the *Agni Puraṇa* there is, however, an extract from the former which I shall here quote, as it might afford hints regarding the use of some of the medicinal substances named.

"By applying oil and rock salt, any disease in the horn of a cow is cured. When the animal has got any sore, *Vacha* (orris root), *Jatamansi* (spikenard), and honey should be applied to it, or the oil which has been boiled with the powder of *Mangishtha* (madder), *Hingu* (assafœtida), and rock salt, or with garlic only. The roots of *Vilva* (marmelos), the *Apamarga* (*Achyranthes aspera*), the juice of *Dhataki* (*grislea tomentosa*), *Patala* (*Trichosanthes dioeca*), and *Kutaja* (*Echites antidy senterica*) are good cures for any pain in the teeth of the animal, as likewise unboiled ghee or butter. Rock salt should be administered to the cow when she

Baboo Hem Chunder Kerr.

has got any disorders in the mouth or tongue. When seized with any distemper in the neck dried ginger, the two kinds of turmeric and a powder of the fruits of *Haritaki* (*Terminalia chebula*) *Vibnutaka* (*Terminalia belerica*) and *Amalaka* (*Phyllanthes emblica*) should be applied to the part affected. When a cow is afflicted with any pain in the heart or the sides or with the gout or consumption, she should be given to drink ghee mixed with the powder of the three fruits aforesaid; if the animal suffer from diarrhœa, the two kinds of turmeric and the *Patha* (a plant, commonly Acindhi) should be administered to it. Dried ginger and *Bhargi* (a shrub) should be administered in every kind of disorder in the bowels, or members of the body, as also in cough or asthma. *Priyangu* (*Paincum italicum*) and salt should be applied to such parts of the animal as may have been broken. The oil of mustard seed is a remedy against the violent operation of the wind in the body; the oil, boiled with *Justimadhu*, (liquorice) against that of the bile; and the three species of, *Vacha* (*viz.*, black pepper, long pepper, and dry ginger) mixed with honey, against that of the phlegm. A mixture of oil, water, and *Haritála* (yellow orpiment) should be applied to such parts of the animal's body as have been broken, or as may have received any slight hurt.

"By lumps of *Masha* (*Phoseolus radiatus*), *Tila* (sessamum), wheat, milk, ghee, and salt being given to a calf, it will begin to thrive.

"I shall now speak of the *Dhupa* or incense made with *Devadáru* (*Pinus deodar*), *Vacha* (orris root), *Mansi* (spikenard), *Guggula* (agolochum), *Hing* (assafœtida) and mustard seeds, which does good to cows, and destroys the diseases occasioned by the unpropitiousness of the planets. The bell which is suspended from the neck of the cow should be exposed to the exhalation of this incense. By *Aswagandha* (*Phisalis flexuosa*) and white sessamum being given to a cow, she will afford a great quantity of milk. For the cure of diseases of cows, *Lakshmi* should be worshipped in the ordure of that animal on the fifth day of the wane. A cure is likewise effected by worshipping *Váswdeva* on the same day with sandal, &c., in the cow's ordure, by assembling all the cows and afterwards worshipping *Hari, Indra, Rudra, Brahma, Surya, Lakshmi* and *Agni*, and offering to them oblations of clarified butter in the fire on the full moon in the month of Aswina (September—October), and then going round the sacrificial fire. After this ceremony some bullocks should be set to fight; and a little salt should be given to the cows. Then presents should be made to the *Brahmanas*. But in case of epidemic diseases, *Vishnu*, together with *Lakshmi*, should be worshipped (on any convenient day); a level square piece of ground having been selected for sacrifice, a lotus consisting of eight petals should be drawn within it,—over the filaments the names of the following gods should be written, namely, *Subhadrá, Ravi, Akasa, Viswarupa, Siddhi, Riddhi, Santi, Rohini*, and *Indra*, and they and others should be worshipped on the petals of the lotus, commencing from the east side. The *Dikpálas* should likewise be worshipped in the petals of the lotus, and oblations should be offered in the fire. The sacrificial fire should be kindled with the wood of the *Kshira* tree (*Mimosa kauki*) and mustard seed, rice, and a hundred *Suvarnas* (a certain weight of sixteen *Mashas*), bell metal, and other metals should be given away to the *Brahmanas*. On that day the cows should not be milked, but set at liberty."

No written records exist of the diseases which affect Bengal cattle in the present day.

As regards prophylactic measures, the natives know nothing besides segregation, but they are rarely in a position to carry it out. The most effectual would, perhaps, be the plan of stamping out the disease by the immediate destruction of every infected animal. But it is by no means practicable. No Hindu above the lowest caste will permit anything of the kind to be done. Passive resistance will be offered in every possible way. Affected cattle will be secreted, the vigilance of the police will be eluded, and the village chowkidars, themselves Hindus in most instances, will be bribed, so as to render the plan completely nugatory. Were the Government to offer the value of every animal to be destroyed, still the plan is sure to break down. Good Hindus abhor the idea of selling cattle, and none will come forward to receive the value of cattle taken with the express purpose of killing them. The feelings of the people are so strong in this respect that whenever a cow dies in a house with the halter round her neck, the owner ties a cloth round his own neck, puts a wisp of straw in his mouth, and, begging alms from his neighbours, performs an expiatory rite; and such people can never be expected to sell cattle in order that they may be destroyed.

Burning of the carcasses of infected cattle will, I am persuaded, prove equally objectionable. No good Hindu will allow it be performed by his people. The idea is horrifying to high caste men, and they are sure to put every possible obstruction in the way to its consummation. It may appear strange to Europeans that people who are accustomed to dispose of their dead by cremation, and feel not the least compunction to place their nearest relatives on the burning pyre, should shrink from the idea of the same rite being accorded to cattle; but custom and religious prejudices are not always amenable to reason, and when they are arrayed against a project it has little chance of success, except by penal laws of an arbitrary and most exceptionable character, which it would not be proper for the British Government to enforce.

It is possible for Government to employ special establishments in every village to take charge of infected carcasses, and to burn them at the cost of Government, but the cost will be heavy, and it is not likely to prove very effectual. Baboo Hem Chunder Kerr.

These objections do not, however, apply to segregation and burial; people have no strong feeling on the subject, and if their utility be properly explained to them, they are likely to be adopted without a demur. There may be some difficulty in preventing moochees surreptitiously exhuming the carcasses for the sake of the hides, but if the people be convinced of the utility of burial, they will not fail to take measures to overcome that difficulty.

APPENDIX No. VI.

CASES AND EXPERIMENTS.

INDEX OF HOSPITAL CASES.

No. of Case.	Subject.	Treatment.	Result.	Page in Appendix.
		I.—CASES TREATED IN ASSAM.		
1	Bullock ...	Nourishing drenches	Cured ...	823
2	Do. ...	Ditto	Do. ...	823
3	Do. ...	Hyposulphite of soda	Died ...	823
4	Do. ...	Ditto	Do. ...	824
5	Do. ...	Ditto	Do. ...	824
6	Cow ...	No medicine; only gruel and laxative food	Do. ...	824
7	Cow-calf ...	Ditto ditto	Do. ...	825
8	Bull-calf ...	Ditto ditto	Do. ...	825
9	Bullock ...	Carbolic acid	Do. ...	825
10	Cow ...	No medicine; only gruel and laxative food	Do. ..	826
11	Bullock ...	Astringents	Cured ...	826
12	Cow ...	No medicine; only gruel and laxative food	Died ...	827
13	Cow-calf ...	Ditto ditto	Do. ...	827
14	Bullock ...	Ditto ditto	Do. ...	827
15	Do. ...	Ditto ditto	Not known ...	828
		II.—CASES TREATED AT CHOOADANGAH.		
16	Bullock ...	Hyposulphite of soda	Cured ...	828
17	Do. ...	Astringents	Do. ..	828
18	Do. ...	Laxatives and astringents	Died ...	829
19	Do. ...	Astringents	Cured ...	829
20	Do. ...	Ditto	Do. ...	830
21	Bull-calf ...	Ditto and tonics	Do. ...	830
22	Cow ...	Hyposulphite of soda and astringents	Do. ...	830
23	Bullock ...	Laxatives and carbolic acid	Died ...	831
24	Do. ...	Laxatives	Not known ...	831
25	Do. ...	Ditto and astringents	Died ...	832
26	Do. ...	Hyposulphite of soda	Not known ...	832
27	Cow ...	Laxatives	Cured ...	832
28	Bullock ...	Ditto and astringents	Do. ...	833
29	Do. ...	Carbolic acid	Do. ...	833
30	Do. ...	Laxatives and tonics	Died ...	833
31	Do. ...	Laxatives	Do. ...	834
32	Cow ...	Carbolic acid	Cured ...	834
33	Ewe ...	No medicine; only gruel and laxative food	Do. ...	834
34	Bullock ...	Astringents	Do. ...	835
35	Cow and a calf ...	Hyposulphite of soda	Not known ...	835
		III.—CASES TREATED AT CULNA.		
36	Cow ...	Astringents	Died ...	836
37	Do. ...	Laxatives and tonics	Cured ...	836
38	Bull ...	Astringents and tonics	Do. ...	837
39	Cow ...	Ditto	Do. ...	837
40	Cow-calf ...	Astringents	Died ...	838
41	Bullock ...	Laxatives and astringents	Do. ...	838
42	Do. ...	Astringents and tonics	Cured ...	839
43	Do. ...	Laxatives	Do. ...	839
44	Cow ...	Ditto and tonics	Do. ...	840
45	Do. ...	Astringents and tonics	Do. ...	840

No. of Case.	Subject.	Treatment.	Result.	Page in Appendix.
		III.—CASES TREATED AT CULNA,—*continued.*		
46	Bullock ...	Laxatives and astringents	Died ...	841
47	Do. ...	Ditto ditto and tonics	Cured ...	841
48	Do. ...	Astringents and tonics	Do. ...	842
49	Do. ...	Laxatives, astringents, and tonics	Died ...	843
50	Do. ...	Ditto ditto ditto	Cured ...	844
51	Do. ...	Ditto and tonics	Do. ...	844
52	Bull ...	Ditto	Died ...	845
53	Bullock ...	Purgatives	Do. ...	845
54	Cow ...	Ditto	Do. ...	846
55	Bullock ...	Carbolic acid, camphor, and linseed oil	Do. ...	846
56	Cow ...	Laxatives and injections	Do. ...	847
57	Bullock ...	Ditto ditto and astringents	Do. ...	847
58	Do. ...	Ditto	Do. ...	848
59	Cow ...	Ditto injections and tonics	Do. ...	849
60	Bullock ...	Astringents	Do. ...	849
61	Do. ...	Ditto and embrocation	Do. ...	850
62	Heifer ...	Ditto and sulphuric acid	Do. ...	850
63	Cow ...	Ditto	Do. ...	851
64	Do. ...	Ditto laxatives and tonics	Cured ...	851
65	Bullock ...	Purgatives and astringents	Died ...	852
66	Heifer ...	Laxatives	Cured ...	852
67	Cow ...	Astringents, laxatives, and tonics	Do. ...	853
68	Bullock ...	Stimulants and astringents	Do. ...	853
69	Do. ...	Laxatives and tonics	Do. ...	855
70	Do. ...	Astringents	Died ...	856
71	Do. ...	Laxatives and tonics	Cured ...	856
72	Heifer ...	Astringents and laxatives	Do. ...	857
73	Cow-calf ...	Laxatives and injections	Do. ...	858
74	Cow ...	Ditto and astringents	Died ...	859
75	Heifer ...	Ditto and tonics	Cured ...	859
76	Cow-calf ...	Ditto and astringents	Died ...	860
77	Do. ...	Aperients and ditto	Do. ...	861
78	Cow ...	Laxatives, stimulants, and tonics; also injections	Recovered ...	861
79	Bullock ...	Ditto	Do. ...	862
80	Heifer ...	Ditto and stimulants	Do. ...	863
81	Do. ...	Ditto and tonics	Do. ...	865
82	Bullock ...	Ditto stimulants and tonics; also injections	Do. ...	865
83	Do. ...	Astringents	Died ...	866
84	Do. ...	Laxatives and tonics	Cured ...	866
85	Bull-calf ...	Ditto	Do. ...	867
86	Bull ...	Astringents, laxatives, and stimulants	Do. ...	867
87	Cow ...	Laxatives and stimulants	Do. ...	868
88	Do. ...	Ditto and astringents	Died ...	869
89	Bullock ...	Aperients	Cured ...	870
90	Cow ...	Astringents and stimulants	Do. ...	871
91	Bullock ...	Ditto and tonics	Do. ...	871
92	Do. ...	Laxatives	Do. ...	872

SUMMARY.

	Treated.	Recovered.	P. C. of treated.	Died.	P. C. of treated.	Not known.
Assam cases	15	3	20	11	73·3	1
Chooadangah	20	12	60	5	25	3
Culna	57	33	57·8	24	42 2	...
Total ...	92	48	52·1	40	43·5	4

HOSPITAL CASES.

CASE No. 1.

Admitted 26th January 1870.—*Result,* **recovered** 31st January 1870.—A **bullock.**—*Condition,* **good.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 26	...	8 a. m.	...	*Degrees.* ...	This animal was made over to the Commission by Captain Gregory, Deputy Commissioner of Luckimpore, who had successfully treated it with nourishing drenches. It is now convalescent. Continue congee water.
„ 27	...	8 a. m.	...	...	Improving.
„ 28	...	8-30 a. m.	...	98·4	Going on well.
„ 29	...	8 a. m.	...	98·8	Doing well.
„ 30	...	8 a. m.	...	...	Improving; feeding heartily.
„ „	...	1-30 p. m.	...	104·	
„ 31	...	9 a. m.	...	98·	Quite well. Removed by owner.

CASE No. 2.

Admitted 26th January 1870.—*Result,* **discharged well** 31st January 1870.—**A bullock,** reported 8 days ill.—*Condition,* **good.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 26	9	8 a. m.	...	*Degrees.* ...	This animal was made over to the Commission by Captain Gregory. Deputy Commissioner of Luckimpore, who had treated it successfully with nourishing drenches. It is now convalescent. There are circular crusts inside the ears and on the dewlap: bowels in good order. Continue congee water and green grass.
„ 27	10	8 a. m.	...	...	Improving.
„ 28	11	8-30 a. m.	...	98 3	Doing very well.
„ 29	12	8 a m.	...	97·4	Going on well.
„ 30	13	1-30 a. m.	...	102·4	Improving.
„ 31	14	9 p. m.	...	96·4	Quite well. Removed by owner.

CASE No. 3.

Admitted 27th January 1870.—*Result,* **died** 28th January.—**A bullock,** reported 2 days ill.—*Condition,* **poor.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 27	3	8 a. m.	60 small and weak.	*Degrees.* ...	A bullock, said to be ill, and to have been off feed since the 25th. Mucous discharge from the left nostril; sub-maxillary glands enlarged and inflamed; great heat and swelling of part; head drooping, so also ears; nose extended; soreness of throat and difficulty of swallowing; extremities cold; body hot; tongue slightly furred; bowels healthy. To have 2 ozs. of hyposulphite of soda every two hours in congee water.
„ „	...	5 p. m.	Very weak.	...	Swelling under jaw increased and hotter; tongue much furred; off feed; purging; very weak.
„ 28	4	8 a. m.	Do.	...	Lying down; not feeding; stupor; great debility; head brought round and kept close to left flank; purging greenish-brown liquid stools.
„ „	...	5-30 p. m.	...	...	Dead. (*Vide* post-mortem No. 12.)

CASE No. 4.

Admitted 27th January 1870.—*Result*, **died** 29th January 1870.—A **bullock**.—*Condition*, **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 27	...	5 p.m.	76, weak.	*Degrees.* ...	A bullock—history of disease not ascertained—brought by the Police this morning from a neighbouring village. A little discharge from mouth, which is hot; no ulcers; no eruption. To have 2 ozs. of hyposulphite of soda in a bottle of congee water three times a day.
„ 28	...	9 a.m.	80	...	Conjunctiva slightly congested; discharge from nostrils; no diarrhœa.
„ „	...	6 p.m.	80	...	Congestion of buccal membrane; tongue much furred.
„ 29	...	8-45 a.m.	56, very weak.	...	Buccal membrane congested; excoriations on border of palate; mucous diarrhœa; in a weak state and lying down; muzzle dry.
„ „	...	2 p.m.	...	...	Dead. No post-mortem.

CASE No. 5.

Admitted 27th January 1870.—*Result*, **died** 28th January 1870.—A **bullock**.—*Condition*, **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 27	...	5 p.m.	...	*Degrees.* ...	A bullock—history of disease not ascertained—brought in by the Police from a neighbouring village. Throat swollen; coat staring; mouth hot; a little excoriation of lower gum; no bowel complaint.
„ 28	...	8-45 a.m.	52, weak.	...	Throat still swollen; a little more excoriation and aphtha on lower gum; tongue furred; no eruption; temperature of the body good; discharge from the nose; diarrhœa. To have 2 ozs. of hyposulphite of soda in congee water three times a day.
„ „	...	5 p.m.	52, very weak.	...	Discharge from nostrils; not feeding nor ruminating; conjunctiva injected; purging.
„ „	...	...	...	...	Died during the following night. (*Vide* post-mortem No. 15.)

CASE No. 6.

Admitted 27th January 1870.—*Result*, **died** 29th January 1870.—A **cow**.—*Condition*, **good.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 27	...	...	...	*Degrees.* ...	A cow brought in this morning by the Police, the history regarding which was not ascertained; slimy diarrhœa, but no blood; vagina congested at the orifice.
„ 28	...	8-45 a.m.	50	*v* 99°	Diarrhœa; nasal flux; vagina congested; discharging mucus; slight hoven; no eruption; external organs of generation much swollen.
„ „	...	5-30 p.m.	...	100·6	Not feeding or ruminating; tongue much furred; mucous membrane of anus much congested and somewhat everted.
„ 29	...	8-45 a.m.	...	...	Just dead; discharge of blood from nostrils just before death. (*Vide* post-mortem No. 11.)

CASE No. 7.

Admitted 27th January 1870.—*Result,* **died** 27th January 1870.—A **cow-calf.**—*Condition,* **fair.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
January 27	...	...	Very feeble.	...	A calf brought in ; previous history not ascertained ; sub-maxillary gland enlarged, a little knotty ; diarrhœa ; lips of vagina pink ; mouth cold ; extremities cold ; falls down.
„ 28	...	...	...	..	Died during the night. (*Vide* post-mortem No. 7.)

CASE No. 8.

Admitted 27th January 1870.—*Result,* **died** 27th January 1870.—A **bull-calf.**—*Condition,* **poor.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
January 27	...	5 p. m.	...	...	A bull-calf brought in, of which the previous history was not ascertained ; congestion of buccal papillæ ; tongue much furred; excoriation of palate ; diarrhœa ; very weak and exhausted, evidently dying.
„ 28	...	...	...	...	Died during the night. (*Vide* post-mortem No. 13.)

CASE No. 9.

Admitted 27th January 1870.—*Result,* **died** 7th February 1870.—A **bullock,** brought from village Joghi Bahar.—*Condition,* **very poor.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
January 27	...	...	...	...	This animal was brought from village Joghi Bahar, and it was subsequently ascertained that it had been attacked with the prevailing disease in the month of November 1869, and that in the course of the disease its eyes had become affected ; on admission it was found blind from an opacity of both corneæ ; diarrhœa ; scab in right ear, several in the left ear ; evidently starved from being blind ; inside of thighs and legs bare.
„ 28	...	...	88	...	Mouth hot ; diarrhœa ; not feeding nor ruminating ; body hot.
„ 29	...	8-45	72, weak.	...	Mouth in good order ; diarrhœa ; feeding a little.
„ 30	...	1 p. m.	84	105·	Muzzle moist ; feeding a little.
„ 31	...	8-30 a. m.	75	98·	Feeding well ; skin looks more healthy.
„ „	...	5 p. m.	100	...	Left eye swollen and inflamed.
February 1	...	9 a. m.	74	...	Dung soft and offensive ; nose dry ; tongue a little furred ; continues emaciated ; left eye much inflamed ; lame, near stifle.
„ „	...	5 p. m.	120	...	Feeding.
„ 2	...	9 a. m.	74	...	Breath offensive ; nose dry ; very weak.
„ „	...	5 p. m.	84	103·	Crusts on dewlap, desquamated patches, and in many parts of the skin the cuticle very scurfy ; tongue much furred ; diarrhœa ; hair off the whole of inside of hind limbs.
„ 3	...	...	76, very weak.	...	Eating a little.
„ 4	...	...	80, and a little irregular.	...	Dung soft ; eats a little.
„ 5	...	...	76, very weak.	..	Much the same.

CASE No. 9,—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
February 6	...	...	108, very weak.	...	Feeding; to have carbolic acid 2 ozs. in linseed oil and rice gruel in two doses at 6 hours interval.
„ „	...	5-30 p.m.	...	...	Has just had second dose; constant movements of legs and twitchings of the whole muscular system; lying on left side, and insensible.
„ 7	...	9 a.m.	...	...	Picking a little food; appetite appears improved, and the animal seems to be altogether much better; to have 3 ozs. of carbolic acid in linseed oil and rice gruel in 3 doses, to be given every 3 hours. Died at noon, shortly after the first dose. (*Vide* post-mortem No. 20.)
					N. B.—The large doses of carbolic acid were given as an experiment.

CASE No. 10.

Admitted 26th January 1870.—*Result,* **died** 30th January 1870.—A **cow,** brought from village Comgaon, reported 1 day ill.—*Condition,* **poor.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 26	2	5 p.m.	96, weak	...	This animal was first seen lying under some bushes near the village of Comgaon and unable to rise; was afterwards carried into hospital. No eruption; no nasal, ocular, or other discharge; ears cold and drooping; body warm; a little distention of rumen; vagina congested; small ulcers on the gums; quivering of limbs and shivering all over when she stands; offensive breath; furred tongue; fæces liquid and of greenish colour. Conjunctiva and schneiderian membrane congested.
„ 27	3	9 a.m.	96	...	Shivering; extremities cold; body very hot; buccal papillæ highly congested at the base; excoriations on mucous membrane of mouth; congestion of mucous membrane of vagina and conjunctiva; animal very weak.
„ 28	4	8 a.m.	...	95	Down on its side; dying; excoriation of lower gums; watery stools.
„ „	...	6 p.m.	100	...	Shaking; aphtha in vagina.
„ 29	5	8-45 a.m.	...	...	Apparently dying.
„ „	...	5 p.m.	...	...	Mouth filled with larvæ; convulsed.
„ 30	6	9 a.m.	...	...	Still lingers on.
...	...	1 p.m.	...	Below 80·	Occasional gasps; died during the afternoon. (*Vide* post-mortem No. 16.)

CASE No. 11.

Admitted 28th January 1870.—*Result,* **discharged convalescent** 6th February 1870.—A **bullock,** reported 3 days ill.—*Condition,* **poor.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 28	4	5 p.m.	96, weak	...	This animal was brought in sick by the villagers; discharge from the nostrils; diarrhœa; mouth hot; gums red; no excoriation; no eruption; ears cold.
„ 29	5	8-30 a.m.	80, very weak	...	Fæces liquid, contained slime and blood; mouth cold; discharge from nose and mouth; tongue much furred; very weak; feeds a little.
„ „	...	5 p.m.	72	...	Spots of congestion on lower lip and buccal membrane.
„ 30	6	1 p.m.	76	...	Feeding a little; watery diarrhœa.
„ 31	7	9 a.m.	66, weak	97	Gums and papillæ congested; diarrhœa; to have tincture of opium 1 oz., chalk ½ oz., catechu 1 dr., in rice gruel twice daily.
„ „	...	5 p.m.	84	...	Excoriation of lower gum; purging stopped; has fed a little.
February 1	8	9 a.m.	66	...	Buccal membrane a little congested; dung soft; repeat medicine in half-doses.

CASE No. 11,—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
February 1	...	5 p.m.	60	103	Dung soft; mucous membrane of mouth much congested.
,, 2	9	9 a.m.	68	96	Improving; dung hard; nose moist; buccal membrane looks healthy; rectum congested, tenesmus.
,, ,,	...	5 p.m.	90	104	
,, 3	10	9 a.m.	72	96	Dung contains pieces of aphtha.
,, ,,	...	5 p.m.	84	...	Feeding well; no purging.
,, 4	11	9 a.m.	66	...	Dung soft. not so slimy; nose moist; feeding.
,, 5	12	9 a.m.	62	...	Doing well; mucous membrane of rectum congested.
,, 6	13	...	...	...	Discharged, convalescent.

CASE No. 12.

Admitted 28th January 1870.—*Result,* **died** 30th January 1870.—A **cow,** reported 1 day ill.—*Condition,* **poor.**

Day of Month	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 28	2	5 p.m.	84	...	This animal was brought in by the villagers, who stated it to have been one day ill. Muzzle dry; diarrhœa; spots of congestion on the lower gums: buccal membrane congested; vagina slightly congested.
,, 29	3	8-30 a.m.	74, weak	...	Diarrhœa; stools very slimy; great debility; low condition; buccal membrane congested.
,, ,,	...	5 p.m.	Very weak.	...	Lying down; very weak; muzzle dry and congested; discharge from nose; excoriation of upper lip and border of lower gum; buccal membrane much congested.
,, 30	4	1 p.m.	...	...	Dead. (*Vide* post-mortem No. 17.)

CASE No. 13.

Admitted 28th January 1870.—*Result,* **died** 29th January 1870.—A **cow-calf,** reported 3 days ill.—*Condition,* **very poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 28	4	5 p.m.	88	...	This animal was brought in by the villagers, who reported it to have been 3 days ill; diarrhœa; coat staring; gums congested, as also the vagina.
,, 29	5	8-45 a.m.	...	...	Diarrhœa, slimy stools; discharge from nostrils and mouth; panting and shivering.
,, ,,	...	5 p.m	...	...	Dying. Died during the night. No post-mortem examination.

CASE No. 14.

Admitted 28th January 1870.—*Result,* **died** 28th January 1870.—A **bullock,** reported 3 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 28	4	5 p.m.	Weak and fluttering.	...	This animal was brought in in a moribund state. Suffering from dysentery and in great pain; mouth very cold; no excoriations; no eruptions; died during the following night. (*Vide* post-mortem No. 14.)

CASE No. 15.

Admitted 28th January 1870.—*Result,* **removed by owner** 1st February 1870.—A **bullock,** reported 1 day ill.—*Condition,* **poor.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
January 28	2	5 p. m.	60	...	This animal was brought in by villagers. Suffering from diarrhœa; no eruption; the mouth very hot.
„ 29	3	8-30 a. m.	72	...	Excoriation of lower gums.
„ „	...	5 p. m.	92	105	Feeding a little.
„ 30	4	1-30 p. m.	...	...	Doing well; feeding.
„ 31	5	9 a. m.	...	...	Dung covered with mucus: feeding; discharge of bloody mucus from nose; excoriation of lower gums and lips; buccal papillæ congested; slight discharge from eyes.
„ „	...	5 p. m.	84	...	Doing well; excoriations; looking better.
February 1	6	...	78	...	Nose dry; dung in good order; buccal membrane slightly congested: Removed by the owner.

CASE No. 16.

Admitted 4th March 1870.—*Result,* **recovered.**—A **bullock,** brought from village Chòoadangah, reported 4 days ill.—*Condition,* **good.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
March 4	5	5 p. m.	64 (agitated).	...	Slight discharge from mouth and nostrils; muzzle a little dry: sticky discharge from urethra; off feed; does not ruminate; great thirst; conjunctiva injected; no eruption; mouth all right; dung hard. slightly coated.
„ 5	6	5 p. m.	80 (excited).	...	To have 2 ozs. hyposulphite of soda in congee water; gum under surface of tongue and buccal papillæ congested; tongue healthy; no appetite thirsty; dung hard; repeat medicine.
„ 6	7	6 p. m.	60	...	Does not eat; thirsty; slight discharge from mouth and nose; mouth looks healthy; no congestion; dung in good order, conjunctiva slightly congested. Repeat medicine.
„ 7	8	5 p. m.	56	...	Muzzle dry; slight discharge from eyes, and more from mouth and nose. also slight discharge from prepuce; has eaten a little to-day; mucous membrane of mouth a little congested; dung hard. Repeat medicine twice daily.
					This was a mild case, and is presumed to have recovered, as the owner did not bring it after the 7th.

CASE No. 17.

Admitted 4th March 1870.—*Result,* **recovered.**—A **bullock,** brought from village Chooadangah, reported 6 days ill.—*Condition,* **fair.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
March 4	7	5 p. m.	60, weak.	...	Eats very little; ruminates; has great thirst; discharge from mouth, nose; and eyes—viscid and copious; mouth and buccal papillæ slightly injected; muzzle dry, slightly fissured; no eruption; coat a little rough-conjunctiva a little injected; purging, stools offensive, watery, slimy, contain no blood; discharge from urethra (slight); flies attack the nostrils.
					℞ Tinct. opii ... ½ oz. Catechu ... ... 1 dr. Chalk ... ... ½ oz. To be given in linseed oil 4 oz.
					Owner reported the recovery of this animal on the 12th.

CASE No. 18.

Admitted 4th March 1870.—*Result,* **died** 7th March.—A **bullock,** brought from village Chooadangah, reported 4 days ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 4	5	5 p. m.	66	*Degrees.* ...	Muzzle dry; discharge from mouth, eyes and nose; gums excoriated and much congested; tongue very much furred; buccal papillæ very much congested; breath offensive; conjunctivæ congested; ears hot; discharge from urethra; no eruption; coat in good order; does not feed, but has great thirst; does not ruminate; has a short laryngeal cough; dung soft, rather slimy. To have—Magnesiæ sulph. ... 4 oz. Spirit eth. nit. ... 4 dr. In congee water.
„ 5	6	5 p. m.	80	...	Discharges as noted yesterday; nasal discharge more abundant; throat sore; has difficulty in breathing; respirations 26 per minute; muzzle dry; tongue very much furred; aphthous patches around orifices of sublingual glands; buccal papillæ much congested, some of them covered with aphtha; there are also excoriations; three or four aphthous patches on hard palate; does not eat; no purging to-day; flies gathering on muzzle. Is evidently much worse; lies down; has great difficulty in rising; severe laryngeal cough. Repeat medicine.
„ 7	8	5 p. m.	...	...	Much worse; lying down in great distress; respiration catching and hurried; a little hoven; purging oily matter; flies all over the body; is very stupid; mouth worse; colour darker. ℞ Spirit eth. nit. ... 2 oz. Tinct. opii ... ... 1 oz. In congee water. Died at 8 p. m. (*Vide* post-mortem No. 25.)

CASE No. 19.

Admitted 4th March 1870.—*Result,* **recovered.**—A **bullock,** brought from village Chooadangah, reported 3 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 4	4	5 p. m.	54, very weak.	*Degrees.* ...	Does not feed nor ruminate; is thirsty; discharges from eyes, nose, and mouth—viscid; muzzle dry and slightly cracked; excoriations of gums, which are much congested; buccal membrane and papillæ much congested; ears hot; is feverish all over; coat staring; has an eruption; purges; is very weak; staggers. To have—Tinct. opii ... ... 2 oz. Ammoniæ carbon ... ½ dr. In congee every six hours.
„ 6	6	7-30 a. m.	...	...	Much worse in every respect; blood and aphtha passed with faeces; shivers and looks stupid; mouth very sore; aphtha and excoriations all over buccal membrane; discharges abundant.
„ „	...	5 p. m.	...	...	Takes a little congee; had tinct. opii ½ oz., catechu 1 dr., chalk ½ oz. at 9 a. m.; does not purge so much.
„ 7	7	5 p. m.	...	...	Going on well; a few aphthous spots on buccal papillæ and lower gums. Is having,— Spirit. ammon. aromat. ... 4 oz. Gentian ... ... 2 dr. In congee twice a day. Had two pailfuls of congee to-day.
„ 8	8	6 p. m.	...	...	Going on well. Repeat the treatment. This animal made a satisfactory recovery.

CASE No. 20.

Admitted 4th March 1870.—*Result*, **not reported.**—**A bullock,** brought from village Chooadangah, reported 7 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 4	8	5 p. m.	60, weak	*Degrees.* ...	Eats a little; ruminates; thirsty; coat staring; viscid discharge from eyes, mouth, and nostrils; muzzle dry and slightly cracked; mucous membrane of gums and buccal papillæ congested; tongue much furred; watery, offensive stools containing blood; breath offensive. To have—Tinct. opii ... ... ½ oz. Catechu ... ... 1 dr. Chalk ... ... ½ oz. In linseed oil 4 oz. This animal was not heard of after this: it is presumed to have recovered.

CASE No. 21.

Admitted 5th March 1870.—*Result*, **recovered.**—A **bull-calf,** brought from village Chooadangah, reported 5 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 5	6	5 p. m.	60	*Degrees.* ...	Off feed; patches of congestion on gums; discharge from nose, eyes, and mouth; purging slimy and bloody matter; no eruption. To have—Tinct. opii ... ... ½ oz. Catechu ... ... ½ dr. Chalk ... ... ½ oz. With linseed oil 4 oz.
„ 6	7	5 p. m.	...	...	Gums as before; discharge from nose; eats a little; dung in better condition; looks livelier; better on the whole. Repeat medicine.
„ 7	8	5 p. m.	...	...	Mucous membrane of mouth healthier; there is still discharge from nose and mouth; purging improved. To have—Gentian ... ... 2 dr. Ginger ... ... 4 dr. In two doses.
„ 8	9	6 p. m.	...	...	Purging bloody and slimy stools; ate nothing to-day; mouth looks better. To have prescription of 5th with 1 dr. of catechu. The owner reported recovery on the 13th.

CASE No. 22.

Admitted 5th March 1870.—*Result*, **recovered.**—A **cow,** brought from village Chooadangah, reported 3 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 5	4	5 p. m.	95	*Degrees.* ...	Slight discharge from eyes, mouth, and left nostril; dung healthy; mucous membrane of vagina much congested; congestion of gums and buccal papillæ; muzzle a little dry; cow in calf; respiration accelerated. To have,—hyposulphite of soda 2 oz. in congee water.
„ 6	5	5 p. m	76, very weak.	...	Purging; discharge from eyes and nose; congestion of gums, lower lip and buccal papillæ; excoriation inside lower lip; breath offensive; muzzle dry; mucous membrane of vagina deeply congested; lies down; breathes quick. To have—Tinct. opii ... ... ½ oz. Catechu ... ... 1 dr. Chalk ... ... ½ oz. In linseed oil 4 oz.

CASE No. 22—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 7	6	6 p. m.	...	...	Much the same; purging continues. Repeat medicine of 6th.
„ 8	7	6 p. m.	...	...	Discharges from eyes, nose, and mouth more abundant; aphthous pellicle on inside of lower lip, which is livid in colour; excoriations and congestion of vagina less; stools less frequent, but contain blood. Increase opium to 1 oz., catechu to 2 dr., and add spirit. eth. nit. 1 oz.
„ 9	8	6 p. m.	...	...	Still purging blood; not worse; repeat the dose. The owner reported recovery on the 13th. This animal dropped her calf on the 10th. It was examined, and the mucous membrane of the fourth stomach was found to be uniformly and brightly congested; the kidneys were also very much congested.

CASE No. 23.

Admitted 5th March 1870.—*Result,* **died** 10th March 1870.—A **bullock,** brought from village Chooadangah, reported 1 day ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 5	2	5 p. m.	...	...	Discharge from nose, eyes, and mouth; lower lip and schneiderian membrane congested; tongue furred; dung hard; eats very little; no eruption. To have—Magnesia sulph... ... 6 oz. Ammon. carb. ... ... 1 dr. In congee water.
„ 7	4	5 p. m.	..	...	Better; feeding a little; dung in good order; muzzle moist; gums a little congested. To have—Carbolic acid ... ... 2 dr. In congee water in two doses.
					This animal's death was reported at 10 p. m. of the 10th March. It was not brought to hospital by the owner after the evening of the 7th, and the symptoms preceding death are not known. *Vide* post-mortem No. 30.

CASE No. 24.

Admitted 6th March 1870.—*Result,* **not reported.**—A **bullock,** brought from village Chooadangah, reported 4 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 6	5	5 p. m.	54	...	Gums and buccal papillæ congested; tongue furred; slight discharge from nose and eyes; feverish; dung healthy. To have—Magnesia sulph. ... 6 oz. Ammon. carb. ... ... 1 dr. In congee water. This animal was not brought back: presumed to have recovered.

CASE No. 25.

Admitted 6th March 1870.—*Result*, **died.**—A **bullock**, brought from village Chooadangah, reported 1 day ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 6	2	5 p. m.	56	*Degrees.* ...	Muzzle dry; mucous membrane of gums, under lip, and cheeks congested; tongue furred; discharge from eyes; feverish; prepuce congested; dung in good order; eats little; thirsty. To have—Magnesia sulph. ... 6 oz. Ammon. carb. ... ... 1 oz. In congee water.
„ 7	3	6 p. m.	...	...	Does not feed; otherwise as before. To have—Sulphur 2 oz. in congee water.
„ 8	4	6 p. m.	...	...	Does not feed; purging; dry muzzle. To have—Sulphur ... ... 1 oz. Magnesiæ sulph. ... ¼ oz. Ginger ... ... ½ oz. In congee.
„ 9	5	6 p. m.	...	...	Not able to come; purging blood; taking congee water. To have—Ammon. carb. ... 2 dr. Tinct. opii ... ... ½ oz. Died on the 10th March at 2 p. m. (*Vide* post-mortem examination No. 26.)

CASE No. 26.

Admitted 6th March 1870.—*Result*, **not reported.**—A **bullock**, brought from village Chooadangah, reported 5 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 6	6	5 p. m.	60, weak	*Degrees.* ...	Discharge from eyes; maggots in off side of lower lip; mucous membrane of mouth generally congested; tongue furred, breath offensive; conjunctiva congested; had purging, is now better; discharge from urethra; muzzle dry; very weak. To have hyposulphite of soda 2 ozs. in congee water. This animal was not brought back: presumed to have recovered.

CASE No. 27.

Admitted 6th March 1870.—*Result*, **recovered.**—A **cow**, brought from village Chooadangah, reported 3 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 6	4	5 p. m.	75	*Degrees.* ...	Muzzle dry; fever; conjunctiva congested; mucous membrane of mouth congested, especially round gums and buccal papillæ; breath offensive; tongue furred; mucous membrane of vagina very much congested; purging watery stools. To have magnesiæ sulph. 3 ozs. in congee water. Recovery reported by owner on the 15th March.

CASE No. 28.

Admitted 8th March 1870.—*Result,* **recovered.**—A **bullock,** brought from village Chooadangah, reported 3 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 8	4	5 p. m.	76, weak	*Degrees.* ...	Discharge from eyes, nose, and mouth; mucous membrane of mouth congested: buccal papillæ enlarged; two aphthous spots on gums; purging; swelling under throat and of dewlap. To have—Magnesiæ sulph. ... 4 oz. Ginger ... ... ½ oz. Sulphur ... ... 2 oz. * In congee water.
„ 9	5	6 p. m.	...	...	Purging; stool contains blood; looks worse. To have—Tinct. opii ... ... 1 oz. Spirit aromat. ammonia ... 1 oz. Chalk ... ... 1 oz. Recovery reported by owner on the 11th March.

CASE No. 29.

Admitted 8th March 1870.—*Result,* **recovered.**—A **bullock,** brought from village Chooadangah, reported 1 day ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 8	2	5 p. m.	84 (excited).	*Degrees.* ...	Feeds a little; very thirsty; no shivering; a little discharge from nostrils, also from eyes and mouth; mucous membrane of mouth congested; excoriation under central teeth; dung soft; slight swelling under throat. To have—Carbolic acid ... ... 2 dr. In congee water in two doses.
„ 9	3	6 p. m.	...	...	Much the same; purging. Repeat medicine. Recovery reported by owner on the 12th March.

CASE No. 30.

Admitted 8th March 1870.—*Result,* **died** 14th March 1870.—A **bullock,** brought from village Chooadangah, reported 1 day ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 8	2	5 p. m.	100	*Degrees.* ...	Off feed; looks stupid; stands aloof from other cattle; no shivering; mouth hot; buccal papillæ very much enlarged; mucous membrane, especially around base, congested; under lip and gums congested; excoriations; discharge from mouth, eyes, and nose—not viscid; dung natural. To have—Magnesiæ sulph. ... 6 oz. Ginger ... ... 1 oz. Sulphur ... ... 2 oz. In congee water.
„ 9	3	6 p. m.	...	...	Purged; otherwise as before. To have—Carbolic acid ... ... 2 dr. In congee water in two doses. Reported to have died on the morning of the 14th March; not brought to hospital after 9th. *Vide* post-mortem No. 32.

CASE No. 31.

Admitted 9th March 1870.—*Result,* **died** 16th March 1870.—**A bullock,** full-grown, brought from village Chooadangah, reported 1 day ill.—*Condition,* **good.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
March 9	2	5 p.m.	...	...	Discharge from nose, but none from eyes or mouth; off feed; muzzle dry; mucous membrane along edges of gums a little congested; no purging. To have—Magnesiæ sulph. ... 4 oz. Sulphur ... ... 2 oz. Ginger ... ... 1 oz. In congee water. Reported to have died at 10 a.m. of 16th March; not brought in the interval. *Vide* post-mortem No. 33.

CASE No. 32.

Admitted 9th March 1870.—*Result,* **not reported.**—A **cow,** brought from village Chooadangah, reported 1 day ill.—*Condition,*—**poor.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
March 9	2	6 p.m.	...	...	Does not eat; purging; mouth in good order; discharge from eyes. To have—Carbolic acid ... ... 2 dr. In congee water in two doses.
„ 12	5	...	...	...	Feeding well. Presumed to have recovered.

CASE No. 33.

Admitted 12th March 1870.—A **ewe,** purchased for consumption, and found to present some symptoms of **rinderpest.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
March 12	...	...	...	...	This animal was purchased for slaughter on the 6th, and found to have discharge from the nose. As it came from a village where *bussunto* was prevailing, it was thought possible that it may have contracted the disease, and was kept for observation. There is discharge from the nose, and slight diarrhœa.
„ 13	...	6 a.m.	...	...	Mucous membrane of vagina congested; discharge from nose, but diarrhœa improved; feeds.
„ „	...	6 p.m.	...	103·2	Thick viscid discharge from nose; slight congestion of mucous membrane of gums; feeds.
„ 14	...	8-35 a.m.	...	101·8	Feeding.
„ 15	...	7-40 a.m.	...	101·4	Feeds well.
„ „	...	5-50 p.m.	...	...	Ditto.
„ 16	...	7-50 a.m.	...	101·4	
„ 17	...	8 a.m.	...	104·4	Feeding well.
„ 18	...	8 a.m.	...	99·2	Ditto.
„ 19	...	8 a.m.	...	101·0	Ditto.
„ 20	...	8-20 a.m.	...	101·8	Ditto.
„ 21	...	8 a.m.	...	102·8	Ditto.

CASE No. 34.

Admitted 13th March 1870.—*Result*, **recovered.**—A **bullock**, brought from village Chooadangah, reported 3 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 13	4	10-35 a. m.	...	*Degrees.* ...	Discharge from eyes, nose, and mouth; nose dry; excoriations on gums and buccal membrane; off feed since yesterday; no thirst; purging watery stools. To have—Tinct. opii ... ... 1 oz. Spirit eth. nit. ... ... 1 oz. Chalk ... ... 2 oz. Catechu ... ... 2 dr. To be given in congee water. To have rice congee and green grass.
„ 14	5	8-38 a. m.	...	...	Gums look healthier; slight discharge from eyes and nose, less in quantity; purged only twice up to this time. To have—Gentian ... ... 2 dr. and repeat half-dose of yesterday's medicine.
„ 15	6	7-20 a. m.	...	...	Feeding well; dunged twice during the night, very soft, and coated with slime.
„ 16	7	7-30 a. m.	...	...	Feeding well; repeat a half-dose of yesterday's medicine, and continue congee.
„ „	...	5-40 p. m.	...	...	Purging mucous matter, passing undigested grass; drinking congee well and feeding; breath becoming sweet, and excoriations healing; purged twice. Repeat dose.
„ 17	8	7-15 a. m.	...	...	Dung soft, contains blood and mucus; doing well.
„ „	...	6-39 p. m.	...	...	Not purging; improving. Convalescent.
„ 18	9	8 a. m.	...	...	Removed by owner.

CASE No. 35.

Admitted 18th March 1870.—*Result*, **not known.**—A **cow**, with a **cow-calf**, brought from village Chooadangah, reported 3 days ill.—*Condition*, **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. March 18	4	8 a. m.	72	*Degrees.* ...	Muzzle dry; sticky discharge from nose and purulent discharge from eyes; aphthous spots and excoriations on the gums, which are congested; mucous membrane of mouth generally congested; dung very hard; feeds sparingly; thirsty; milk suppressed; lips of labia vagina swollen. To have —Hyposulphite of soda 2 oz., twice daily in congee water. Calf, 5 months old; condition good; muzzle dry; discharge from nose and eyes; mucous membrane of mouth slightly congested; conjunctiva slightly congested; lips of vagina much congested; shivering, and hair standing on end (cold morning); dung hard; two days ill; give same medicine in smaller dose. The result of these cases is not known.

CASE No. 36.

Admitted 12th December 1870.—*Result,* **died** on the day of admission at 2 P. M.—A **cow,** brought from village Culna, reported 7 days ill.—*Condition,* **fair.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 12	8	8 a. m.	...	*Degrees.* ...	Lying down and unable to rise; mucous membrane of mouth generally congested; buccal membrane all covered with excoriations and aphthous deposit; mouth icy cold; prolapsus ani; straining violently; mucous membrane of vagina deeply congested; abortion appears imminent; has been purging 2 days (a very severe case). Tinct. opii ... ... 1 oz. Chalk ... ... 2 oz. Catechu ... ... 2 dr. Spt. nit. ethr. ... 1 oz. In thin rice gruel. and 2 hours afterwards 1 dr. of sulphuric acid in a quart of water. Died at 2 p. m.

CASE No. 37.

Admitted 12th December 1870.—*Result,* **discharged cured** 24th December 1870.—A **cow,** brought from village Culna, reported 9 days ill.—*Condition,* **good.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 12	10	8 a. m.	...	*Degrees.* ...	Discharge from eyes, nose, and mouth; excoriations and aphthous deposit on gums; breath offensive; buccal membrane congested; one or two papillæ excoriated. Has been purging 4 days; red and white evacuations with pieces of flesh-like material coming away (so says the owner); no eruptions, but cuticular desquamation about the shoulders and ribs; vagina much congested; appetite returning; inclined to eat a little *doob* grass. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Spt. ethr. nit. ... 1 oz. Catechu ... ... 1 dr.
„ 13	11	8 a. m.	...	...	Animal looking better, purging less; dung better color; eats a little. Repeat dose.
„ 14	12	8 a. m.	...	...	Purging, but no blood or mucus, and less offensive. Repeat dose.
„ 15	13	8 a. m.	...	...	Animal better; purging less. Repeat dose morning and evening.
„ 16	14	8 a. m.	...	...	Feeding better, but purging. Repeat dose morning and evening.
„ 17	15	8 a. m.	...	...	Doing well; purging less. Repeat dose morning and evening.
„ 18	16	8 a. m.	...	...	Doing well; purging less. Medicine the same as yesterday.
„ 19	17	8 a. m.	...	...	Doing well and feeding, but still purging. Medicine the same as yesterday.
„ 20	18	8 a. m.	...	...	Animal doing well, but purging without blood and mucus; feeds well; eats both gruel and grass. Common salt... ... 1 oz. Charcoal ... ... 3 oz. Chalk ... ... 1 oz. morning and evening.
„ 21	19	8 a. m.	...	...	Animal doing well, but purges a little, and there is little blood in the dung. Spt. nitr. ethr. ... ½ oz. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr.
„ „	...	6 p. m.	...	...	In the evening the animal was doing well, purging stopped. Sulphate of iron ... 1 dr.
„ 22	20	8 a. m.	...	...	Has shown symptoms of abdominal pain this morning. Passes a little soft dung, but strains frequently. Linseed oil ... ... 4 oz. Turpentine ... ... 1 oz. in hot rice gruel.
„ 23	21	8 a. m.	...	...	Doing well. Sulphate of iron ... 1 dr.
„ 24	22	8 a. m.	...	...	Perfectly well; discharged.

CASE No. 38.

Admitted 12th December 1870.—*Result*, **discharged cured** on the 22nd December 1870.—**A bull,** brought from village Culna, reported 6 days ill —*Condition*, **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 12	7	8 a.m.	...	*Degrees.* ...	Purging watery stools with mucus the last 4 days; discharge from nose and mouth; muzzle dry; mouth cold; no eruptions on the body; urethra deeply congested, very viscid discharge therefrom. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. Spt. nitr. eth. ... ½ oz. in rice gruel.
„ 13	8	8 a.m.	...	...	Purging less; muzzle dry. Repeat dose now and again—this evening if necessary
„ 14	9	8 a.m.	...	...	A little better, but still purging a little. Repeat astringent dose now and again—in the evening if necessary.
„ 15	10	8 a.m.	...	...	Looking better, purging less, but passing blood in clots. The same medicine mixed with 4 oz. of linseed oil. In the evening half astringent dose with 2 oz. linseed oil.
„ 16	11	8 a.m.	...	...	Better. Repeat dose.
„ 17	12	8 a.m.	...	...	Not purging; doing well. Sulphuric acid 1 dr. in a pint of water.
„ 18	13	8 a.m.	...	...	Better, but purging a little. Medicine as yesterday.
„ 19	14	8 a.m.	...	...	Doing well. Sulphate of iron 1 dr.
„ 20	15	8 a.m.	...	...	Doing well. Sulphate of iron 1 dr.
„ 21	16	8 a.m.	...	...	Doing well. Repeat dose three times a day.
„ 22	17	8 a.m.	...	...	Discharged cured.

CASE No. 39.

Admitted 12th December 1870.—*Result*, **discharged cured** on the 22nd December 1870.—A **cow,** brought from village Culna, reported 6 days ill.—*Condition*, **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 12	7	8 a.m.	...	*Degrees.* ...	Gone 7 months in calf; has discharge from mouth; the nose is dry and gums congested, with excoriations and aphthous deposit; mouth cold; tremor of flanks; skin warm; purging watery stools with mucus the last 3 days; mucous membrane of vagina congested and showing aphthous deposit; off feed; no eruption on the body. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. In rice gruel twice a day.
„ 13	8	8 a.m.	...	...	Doing well. Repeat dose.
„ 14	9	8 a.m.	...	...	Still purging, but eats a little; gums a little healthier. Repeat astringent dose this morning and again in the evening if necessary.
„ 15	10	8 a.m.	...	...	Is much better. Repeat dose.
„ 16	11	8 a.m.	...	...	Doing well. Sulphuric acid 1 dr. at midday.
„ 17	12	8 a.m.	...	...	Feeding and doing well. Repeat yesterday's medicine.
„ 18	13	8 a.m.	...	...	Daily improving. Medicine the same.
„ 19	14	8 a.m.	...	...	Doing very well. Sulphate of iron 1 dr.
„ 20	15	8 a.m.	...	...	Doing very well. Sulphate of iron 1 dr.
„ 21	16	8 a.m.	...	...	Going on very well. Repeat dose three times a day.
„ 22	17	8 a.m.	...	...	Discharged cured.

CASE No. 40.

Admitted 12th December 1870.—*Result*, **died** 14th December 1870.—A **cow-calf,** brought from village Culna, reported 5 days ill.—*Condition*, **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 12	6	8 a. m.	...	*Degrees.* ...	Gums are congested, buccal membrane and papillæ are also much congested and excoriated. Purging white watery stools. Is desirous to eat a little, but cannot on account of the soreness of the mouth; eruptions on udder and inside groin. Tinct. opii ... ½ oz. Spt. nitr. eth. ... ½ oz. Chalk ... ... ½ oz. Catechu ... ... ½ dr. To be made up in 4 doses in thin rice gruel; 2 doses to be given to-day.
„ 13	7	8 a. m.	...	...	In the same state. Repeat dose.
„ 14	8	8 a. m.	...	...	Very ill; difficulty of respiration; grunting. Repeat dose. Died at noon.

CASE No. 41.

Admitted 12th December 1870.—*Result*, **died** 19th December 1870.—A **bullock,** brought from village Culna, reported 1 day ill.—*Condition*, **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 12	2	8 a. m.	...	*Degrees.* ...	Eats a little; is said to have been shivering since yesterday; symptoms of fever; slight discharge from mouth, nose, and eyes. Epsom salts ... ½ lb. Sulphur ... ... 2 oz. Ginger ... ... 1 oz. Turpentine ... ... ½ oz. In thin rice gruel.
„ 13	3	8 a. m.	...	...	Better; bowels slightly relaxed and of healthy appearance. Repeat dose.
„ 14	4	8 a. m.	...	...	Bowels relaxed, but not purging; not feeding; very viscid discharge from nose; muzzle dry; gum is very much congested. Common salt ... ½ lb. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. In thin rice gruel; 2 oz. of charred bread in thin rice gruel at midday.
„ 15	5	8 a. m.	...	...	Is better; purging has not yet commenced; discharge from eyes, nose, and mouth, very viscid. Charred bread 2 oz. three times a day in thin rice gruel; in the evening half a pint of linseed oil and 1 oz. turpentine; injection to be also given.
„ 16	6	8 a. m.	...	...	Has commenced to purge slightly. No medicine.
„ 17	7	8 a. m.	...	...	Animal nearly in the same state; is purging, but not much, and no blood and mucus; does not eat; slight fever. Linseed oil ... ½ pt. Turpentine ... ½ oz.
„ 18	8	8 a. m.	...	...	Feeding a little and purging less. Sulphuric acid ... 1 dr. at midday.
„ 19	9	8 a. m.	...	...	In the same state; perhaps worse; purging. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ½ oz. Chalk ... 1 oz. Catechu ... 1 dr. In thin rice gruel. In the evening was found to be very weak and dying, unable to get up; before dying, is reported to have rushed violently about in a state of delirium in the shed; at last ran its head against a wall, and fell down and gradually died.

CASE No. 42.

Admitted 12th December 1870.—*Result,* **discharged cured** on the 25th December 1870.—A **bullock,** brought from village Nowpara, reported 6 days ill.—*Condition,* **fair.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
December 12	7	8 a. m.	...	...	Had come yoked in a cart from a distance of 18 miles. It is said that the village from which it had come is free from disease; the bullock arrived at Culna, where rinderpest prevails, on the 6th, in the morning, and became ill; the owner did not see or hear of any disease at the villages *en route.* Purging 3 days, but stool not discolored; thick discharge from eyes, nose, and mouth, from left eye and from both nostrils, the discharge is more or less streaky with blood; breath very offensive; deep congestion of gums and lower lips; excoriations with aphthous deposit; buccal membrane congested, but not excoriated; urethra much congested with aphthous deposit. Tinct. opii ... 1 oz. Chalk ... 2 oz. Spt. nitr. eth. ... 2 oz. Catechu ... 1 dr. To be given in rice gruel; 2 hours afterwards sulphuric acid 1 dr. in one pint of water well shaken up.
„ 13	8	8 a. m.	...	...	A little worse; has not eaten anything, but 4 bottles of rice gruel have been given; the sores of the mouth looking healthier, and breath is not so very offensive. Repeat astringent dose; but instead of 1 give 2 dr. of catechu, and sulphuric acid 1 dr. at midday.
„ 14	9	8 a. m.	...	...	Appearing better; gets up and walks with ease compared to what he did yesterday; mouth and gum looking better; left lung congested, probably from lying upon that side; tries to pick a little; purging less, and less blood and mucus. Tinct. opii ... ... 1 oz. Chalk ... ... 2 oz. Spt. ethr. nit. ... 2 oz. Catechu ... ... 1 dr. Morning and evening; sulphuric acid 1 dr. at midday.
„ 15	10	8 a. m.	...	...	Animal a little better, but still purging blood and mucus. Medicine as yesterday, but with the first dose give 3 oz. of linseed oil.
„ 16	11	8 a. m.	...	...	Feeding a little; the muzzle is moist and gum healthier. Astringent dose with 2 oz. of linseed oil morning and evening.
„ 17	12	8 a. m.	...	...	Purging less, but there is a little blood and mucus in the dung. Repeat dose.
„ 18	13	8 a. m.	...	...	Nearly in the same state as yesterday, perhaps a little better. Repeat dose.
„ 19	14	8 a. m.	...	...	The animal is much better, but it is still passing a little blood and mucus. Repeat dose.
„ 20	15	8 a. m.	...	...	Doing well. Sulphate of iron 1 dr. morning and evening. In this way the animal gradually recovered, and was discharged perfectly cured on the 25th instant.

CASE No. 43.

Admitted 12th December 1870.—*Result,* **discharged cured** on the 20th December 1870.—A **bullock,** brought from village Culna, reported 6 days ill.—*Condition,* **good.**

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
December 12	7	8 a. m.	...	...	Purging clay-colored fæces; eats a little; there is slight discharge from eyes and nose; the mouth is in a healthy state (a very mild case). Epsom salt ... ... 4 oz. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. In thin rice gruel.
„ 13	8	8 a. m.	...	...	The medicine has acted; stool very offensive. Sulphuric acid 1 dr. in rice gruel.

CASE No. 43—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 14	9	8 a. m.	...	*Degrees.* ..	Purging blood and mucus from 9 o'clock last night. The muzzle is very dry; the animal seems to have no appetite; discharge from eyes, nose, and mouth; masked cough; right lung congested. Common salt ... ... 3 oz. Sulphur ... ... 1 oz. Ginger ... ... ½ oz. In thin rice gruel; at midday powdered charred bread 2 oz. in thin rice gruel.
„ 15	10	8 a. m.	...	...	Slightly better. Repeat medicine; in the evening 2 oz. common salt in gruel.
„ 16	11	8 a. m.	...	...	Doing well. The same treatment was continued till the 20th, when the animal was discharged perfectly cured.

CASE No. 44.

Admitted 12th December 1870.—*Result*, **discharged cured** 23rd December 1870.—A **cow**, brought from village Culna, reported 3 days ill.—*Condition*, **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 12	4	8 a. m.	...	*Degrees.* ...	Discharge from eyes, mouth, and nose; very viscid from nose; mouth cold; coat staring; no eruptions on the body; purging from yesterday thin stools; loss of appetite, but drinks a little; viscid discharge from vagina, which is slightly congested; grazing a little. Epsom salt ... ... 3 oz. Sulphur ... ... 1 oz. Ginger ... ... ½ oz. To be powdered up and given in rice gruel.
„ 13	5	8 a. m.	...	...	Appears a little better; muzzle moist; picking a little. Sulphuric acid 1 dr. in a pint of rice gruel.
„ 14	6	8 a. m.	...	...	Purging, but not blood and mucus; not feeding this morning. Repeat Epsom salt ... ... 3 oz. Sulphur ... ... 1 oz. Ginger ... ... ½ oz. To be powdered up and given in rice gruel.
„ 15	7	8 a. m.	...	...	Better; feeding a little. Continue medicine.
„ 16	8	8 a. m.	...	...	Doing well; was treated with tonics, went on improving day by day, and was discharged cured on the 23rd instant.

CASE No. 45.

Admitted 12th December 1870.—*Result*, **discharged cured** on the 22nd December 1870.—A **cow**, brought from village Culna, reported 18 days ill.—*Condition*, **poor.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 12	19	8 a. m.	...	*Degrees.* ...	Has purged 5 or 6 days; slight discharge from eyes; buccal membrane slightly congested; slight eruption, consisting in cuticular desquamation, with a very slight, thin, pale, yellow discharge; on teats are several pox marks in course of healing; on one teat are 4 about the size of a very small pea. These have well defined even edges, are pitted, of a bright red color, with clean edges in course of healing. This cow is evidently recovering. Is inclined now to graze. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz. Chalk ... ... 2 oz. Catechu ... ... ½ dr. In rice gruel.

CASE No. 45—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 13	20	8 a. m.	...	...	Animal in the same state. Repeat dose.
„ 14	21	8 a. m.	...	...	Feeding well, but still purging. Repeat dose this morning, and again in the evening if necessary.
„ 15	22	8 a. m.	...	...	Much better and feeding well. Signs of recovery showed themselves day after day, and the animal was discharged cured on the 22nd instant. Sulphate of iron 1 dr. morning and evening was given.

CASE No. 46.

Admitted 14th December 1870.—*Result,* **died** 16th December 1870.—A **bullock,** brought from village Serampore, reported 4 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 14	5	8 a. m.	...	...	Said to be purging; dysenteric from last night; does not feed, and there is discharge from eyes, nose, and mouth; gums and buccal membrane slightly excoriated; the ears are drooping and the animal coughs now and then; there are no eruptions on the body. Purging blood and mucus; weak. Epsom salt ... ... 4 oz. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. In thin rice gruel.
„ 15	6	8 a. m.	...	...	Spt. nitr. eth. 1 oz., tinct. opii 1 oz., chalk 2 oz., catechu 1 dr. Discharge from eyes, nose, and mouth, very thick; purging blood and mucus; very ill. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ... ½ oz. Chalk ... .. 1 oz. Catechu ... ... 1 dr. In linseed oil 4 oz.
		5-30 p. m.	...	...	In the same state. Repeat dose.
„ 16	7	8 a. m.	...	...	Much worse, and there is a difficulty of breathing. Stp. nitr. eth. ... 1 oz. Tinct. opii ... ... ½ oz. To be given at once in thin rice gruel. Camphor ... ... 3 dr. at midday. Died at 10 a. m.

CASE No. 47.

Admitted 14th December 1870.—*Result,* **discharged cured** 29th December 1870.—A **bullock,** brought from village Serampore, reported 2 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 14	3	8 a. m.	...	...	Said to be purging; dysenteric from yesterday. There is a very viscid discharge from eyes, nose, and mouth; very dry muzzle. The buccal membrane and gums are congested, and there is excoriation on floor of lower jaw with aphthous deposit. Epsom salt ... 4 oz. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. In rice gruel.

CASE No. 47—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 15	4	8 a. m.	...	*Degrees.* ...	Slightly better. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz Catechu ... ... 1 dr. Linseed oil ... ... 4 oz.
„ „	...	5-30 p. m.	...	...	Slightly better. Repeat dose; only give 1 oz. instead of ½ oz. spt. nitr. eth.
„ 16	5	8 a. m.	...	...	Slightly better. Continue the medicine.
„ 17	6	8 a. m.	...	...	Better, feeding. Sulphuric acid 1 dr.
„ 18	7	8 a. m.	...	...	Feeding; dung improved. Medicine as of yesterday.
„ 19	8	8 a. m.	...	...	Has much improved. Medicine as of yesterday.
„ 20	9	8 a. m.	...	...	Doing well. Medicine as of yesterday.
„ 21	10	8 a. m.	...	...	Improving. Sulphate of iron 1 dr. thrice a day. Diet the same. During the remainder of its stay in the hospital it got tonics and sulphuric acid, and was discharged perfectly cured on the 29th instant

CASE No. 48.

Admitted 14th December 1870.—*Result*, **discharged cured** 29th December 1870.—A **bullock**, brought from village Serampore, reported 5 days ill.—*Condition*, **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 14	6	8 a. m.	...	*Degrees.* ...	Viscid discharge from nose and mouth. It has been purging since the commencement of the disease. There is a general deep congestion of the mouth with many aphthous excoriations, and in the left corner of the mouth there are maggots; has purged blood and mucus. No eruption on the body. Give sulphuric acid 1 dr. in one quart of water, dress the wound in which there are maggots with camphor and turpentine. Tinct. opii ... ... ⅓ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. Spt. nitr. eth. ... 1 oz. Morning and evening.
„ 15	7	8 a. m.	...	...	A little better, but still purging. Repeat dose.
		6 p. m.	...	...	A little better, but still purging. Continue medicine
„ 16	8	...	...	...	Feeding a little, but purging blood and mucus. Repeat dose with linseed oil 2 oz. morning and evening; sulphuric acid 1 dr. at midday; wounds to be dressed.
„ 17	9	8 a. m.	...	...	Better and feeds a little, but still purging. Repeat dose.
„ 18	10	8 a. m.	...	...	Doing well. Continue medicine.
„ 19	11	8 a. m.	...	...	Still purging; animal very weak. Continue medicine, and give sulphuric acid at midday.
„ „	...	5 p. m.	...	...	Still purging; animal very weak. Repeat dose.

CASE No. 48.—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 20	11	8 a.m.	...	...	Doing pretty well. Medicine as yesterday.
„ 21	12	8 a.m.	...	...	Doing pretty well. Medicine as yesterday.
„ 22	13	8 a.m.	...	...	Motion still dysenteric. Feeding a little. Linseed oil ... ... 4 oz. Turpentine ... ... 1 oz. In 2 quarts of rice gruel.
„ „	„	6 p.m.	...	...	Doing well. Linseed oil ... .. 2 oz. Turpentine ... ... ½ oz. In rice gruel.
„ 23	14	8 a.m.	...	...	Still purging a little. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. Spt. nitr. eth. ... 1 oz.
„ 24	15	8 a.m.	...	...	Better than yesterday. Continue medicine.
„ 25	16	8 a.m.	...	...	Sores in mouth healing. Sulphuric acid 1 dr.
„ 26	17	8 a.m.	...	...	Doing well. Repeat dose.
„ 27	18	8 a.m.	...	...	Sores in mouth healing; doing well. Sulphate of iron ... 1 dr. Sulphuric acid ... 1 dr. at midday.
„ 28	19	8 a.m.	...	...	Doing well, but coughs from sore-throat. Sulphate of iron 1 dr. morning and evening; apply embrocation to the throat.
„ 29	20	8 a.m.	...	...	Better; discharged.

CASE No. 49.

Admitted 14th December 1870.—*Result,* **died** 16th December 1870.—A **bullock,** brought from village Serampore, reported 3 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 14	4	8 a.m.	...	...	Has not commenced to purge, but it stands aloof; has excoriations and congestion of mouth, gums, and buccal membrane, with aphthous deposit. It is very weak, and there is discharge from eyes, nose, and mouth; is coughing and lying down. Epsom salt ... ... 4 oz. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. In thin rice gruel.
„ 15	5	8 a.m.	...	...	Still very weak, and is purging. Sulphuric acid 1 dr. at midday.
„ ..	„	6 p.m.	...	...	Still very weak, and is purging. Common salt... ... 4 oz. Sulphur ... ... 1 oz. Ginger ... ... 3 dr. Afterwards 1 oz. of spt. nitr. eth. in a pint of water.
„ 16	6	8 a.m.	...	...	In the same state and is purging blood and mucus; very weak. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ... ⅓ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. Linseed oil ... ... 2 oz. Morning and evening. Sulphuric acid 1 dr. at midday. Died at midnight.

CASE No. 50.

Admitted 14th December 1870.—*Result*, **discharged cured** 23rd December 1870.—A **bullock**, brought from village Serampore, reported 4 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 14	5	8 a.m.	...	...	Discharge from eyes, nose, and mouth; is said to be purging for the last 3 days; no blood; muzzle very dry; buccal membrane and gums are congested and excoriated, and there are one or two specks of aphtha on the latter; very weak. Espom salt ... ... 4 oz. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. In thin rice gruel.
„ 15	6	8 a.m.	...	...	Looking better. Sulphuric acid 1 dr. at midday.
„ 16	7	8 a.m.	...	...	Slightly better, but is purging blood and mucus. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. With linseed oil ... 2 oz.
„ 17	8	8 a.m.	...	...	Purging, and not feeding. Repeat dose.
„ 18	9	8 a.m.	...	...	Purging, but not blood or mucus. Repeat dose.
„ 19	10	8 a.m.	...	...	Somewhat better, but purging, dung being mixed with a little blood and mucus. Repeat dose.
„ 20	11	8 a.m.	...	...	Doing well, but still purging. Repeat dose, but discontinue linseed oil.
„ 21	12	8 a.m.	...	...	Doing well, but purging a little mucus and blood. Repeat dose, but discontinue linseed oil.
„ „	...	6 p.m.	...	...	Stopped purging and feeding better.
„ 22	13	8 a.m.	...	...	Going on well; bowels slightly constipated. Common salt... ... 4 oz. In 3 quarts of rice gruel. Sulphuric acid ... 1 dr. at midday. Sulphate of iron ... 1 dr. at evening.
„ 23	14	8 a.m.	...	...	Doing very well; discharged.

CASE No. 51.

Admitted 14th December 1870.—*Result*, **discharged cured** 23rd December 1870.—A **bullock**, brought from village Serampore, reported 11 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 14	12	8 a.m.	...	...	The muzzle is dry, and there is discharge from the eyes and nose; there are maggots at the inner corner of the eye, and off side of mouth. Dress the wounds with camphor and turpentine, and give 3 drs. of camphor in a pint of thin rice gruel.
„ 15	13	8 a.m.	...	...	Better. Dress fly-blown wounds three times a day, and give 4 drs. of camphor in rice gruel. Common salt... ... 4 oz. Sulphur ... ... 1 oz.
„ „	...	5 p.m.	...	...	
„ 16	14	8 a.m.	...	...	Much better. Camphor 2 dr. morning and evening in rice gruel; wounds to be dressed as before.
„ 17	15	8 a.m.	...	...	Much better. Camphor 2 dr. morning and evening in rice gruel; wounds to be dressed as before.
„ 18	16	8 a.m.	...	...	Much better. Camphor 2 dr. morning and evening in rice gruel; wounds to be dressed as before.

CASE No. 51—*continued.*

Day of Month.	Disease.	Hour of examination	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 19	17	8 a. m.	...	...	Feeding and doing well. Camphor 2 drs. morning and evening in rice gruel; wounds to be dressed as before.
„ 20	18	8 a. m.	...	...	Doing well. Sulphate of iron 1 dr. morning and evening.
„ 21	19	8 a. m.	...	...	Doing well. Sulphate of iron 1 dr. thrice a day.
„ 22	20	8 a. m.	...	...	Daily improving. Sulphate of iron 1 dr. morning and evening. Discharged cured on the following day.

CASE No. 52.

Admitted 14th December 1870.—*Result,* **died** 17th December 1870.—A **bull,** brought from village Culna, reported 1 day ill.—*Condition,* **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 14	2	8 a. m.	...	...	Said to be shivering from yesterday and eating little; coughs; purging has not yet commenced; the bowels are slightly constipated and the dung is tinged with blood and mucus; the gums and buccal membrane are slightly congested, and there is a slight discharge from eyes and nose. Common salt... ... 1 lb. Sulphur ... ... 3 oz. Ginger ... ... 1 oz. In thin rice gruel.
„ 15	3	8 a. m.	...	...	Slightly better. Common salt .. ... 4 oz. Sulphur ... ... 1 oz. Ginger .. ... ½ oz.
„	...	5 p. m.	...	...	Slightly better. Repeat dose, injection.
„ 16	4	8 a. m.	...	...	Feeding better, but bowels yet costive. Linseed oil ... ... ½ pint. Turpentine ... ... 1 oz. Injection three times a day. Died at 2 a. m. on the following day.

CASE No. 53.

Admitted 15th December 1870.—*Result,* **died** 17th December 1870.—A **bullock,** brought from village Serampore, reported 4 days ill.—*Condition,* **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 15	5	8 a. m.	108, very weak.	...	Is purging watery stools from this morning; there is viscid yellow discharge from nose; has fever, and the owner says that the animal had shivering fits at the commencement of the disease; the mouth is hot and the muzzle dry; there are sores inside nose, and there is tumefaction of nostril, the same being more or less plugged up on account of the internal swelling and sores; the lungs are congested. Spt. nitr. eth. ... 2 oz. Tinct. opii . ... 1 oz. In thin rice gruel.

CASE No. 53—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 16	6	8 a.m.	...	*Degrees.* ...	Very weak; pulse very weak; purging, but no blood or mucus. Repeat dose with half a pint of linseed oil.
„ „	...	6 p.m.	...	...	Very weak; pulse very weak; purging, but no blood or mucus. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Catechu ... ... 1 dr. Died at midnight.

CASE No. 54.

Admitted 16th December 1870.—*Result,* **died** 16th December 1870.—A **cow,** brought from village Culna, reported 2 days ill.—*Condition,* **good.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 16	3	1 p.m.	...	*Degrees.* ...	Is purging, and the owner says that it commenced from this morning; her ears are drooping, and the muzzle very dry; the coat is staring, and excoriations on lower gums are visible; the mouth is cold, and the animal is purging watery stools mixed with mucus; the buccal membrane is also excoriated, and the dung is very offensive; the animal eats but little, and is shivering. Tinct. opii ... ... ½ oz. Chalk ... ... 1 oz. Spt. nitr. eth. ... 1 oz. In thin rice gruel. Died at midnight.

CASE No. 55.

Admitted 20th December 1870.—*Result,* **died** 23rd December 1870.—A **bullock,** brought from village Culna, reported 1 day ill.—*Condition,* **poor.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 20	2	8 a.m.	...	*Degrees.* ...	Off feed, and its muzzle is very dry and the ears are drooping; the bowels are relaxed; the mucous membrane of mouth is slightly congested; there is discharge from the eyes. Carbolic acid ... ... 1 dr. Linseed oil ... ... 1 oz. Well mixed with warm rice gruel twice a day.
„ „	...	6 p.m.	...	...	Off feed, and its muzzle is very dry and the ears are drooping; the bowels are relaxed, the mucous membrane of the mouth is slightly congested; there is discharge from the eyes. Common salt ... ... 2 oz. Charred bread ... ... 4 oz. Afterwards camphor 2 dr. in gruel.
„ 21	3	8 a.m.	...	...	In the same state; very ill; is lying down and eats and drinks nothing. Carbolic acid ... ... 1 dr. In a pint of rice gruel at once; in 2 hours common salt 2 oz. Charred bread ... ... 4 oz.
„ „	...	6 p.m.	...	...	Purged twice since morning's visit, and some mucus discharged with watery stool. Carbolic acid ... ... 1 dr. In rice gruel.

CASE No. 55—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 22	4	8 a. m.	...	*Degrees.* ...	Much the same; the muzzle remains very dry and motions watery; the rumen is much distended with food. Carbolic acid ... ... 1 dr. In linseed oil ... 2 oz. Mixed with hot rice gruel, to be given 3 times a day. Died 23rd December 1870.

CASE No. 56.

Admitted 21st December 1870.—*Result*, **died** 23rd December 1870.—A **cow**, brought from village Rungpara, reported 5 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 21	6	8 a. m.	...	*Degrees.* 103·4	Is stated by the owner not to have eaten anything for the last 4 days. No water has been given, but a little rice gruel was given yesterday; the bowels are slightly constipated; the mouth is very hot and the gums are deeply congested; there is discharge from mouth and nose, and fever; lies down a great deal. Common salt ... ... 1 lb. Ginger ... ... 1 oz. Sulphur ... ... 1 oz. In thin rice gruel.
„ „	...	6 p. m.	...	104·	A little better; has been feeding a little. Linseed oil ... ... 3 oz. Turpentine ... ... 1 oz. In a quart of thin rice gruel.
„ 22	...	8 a. m.	...	97·8	The gums are very much excoriated, with considerable aphthous deposits thereon, and the mouth is very sore; the animal is lying down and looks round to the flank in pain; the discharge from nose and mouth is very viscid. The muzzle is very dry and the bowels have not been opened. Injection at once, to be repeated every half-hour. Also give drench with linseed oil 3 oz. and turpentine 1 oz. in hot rice gruel.
„ „	...	6 p. m.	...	95·6	Passed only a little blood, but no dung.
„ 23	8	8 a. m.	...	...	Lying down and in a worse state. Turpentine ... ... 1 oz. Linseed oil ... ... 3 oz. Continue injection. Died in the forenoon.

CASE No 57.

Admitted 21st December 1870.—*Result*, **died** 25th December 1870.—A **bullock**, brought from village Poaldanga, reported 2 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 21	3	8 a. m.	...	*Degrees.* 103·6	Has not yet commenced to purge and is feeding but little; there is sticky discharge from nose and an aphthous condition of gums; the mouth is very hot, and there is difficulty of breathing; the coat is staring and the ears are drooping. Common salt... ... 1 lb. Sulphur ... ... 2 oz. Ginger ... ... 1 oz. In thin rice gruel.
„ „	...	6 p. m.	...	103·6	Has not eaten anything all day; is lying down. Linseed oil ... ... 3 oz. Turpentine ... ... 1½ oz. In thin rice gruel. Injection every hour.

CASE No. 57—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
				Degrees.	
December 22	4	8 a. m.	...	102·8	Slightly better, but rumen much impacted; a little dung has been passed by injections; has taken a little thin rice gruel. Continue injection and give— Linseed oil ... ... 3 oz. Turpentine ... ... 1 oz. In rice gruel.
,, ,,	...	6 p. m.	...	103·2	Nearly in the same state. Linseed oil ... ... 2 oz. Turpentine ... ... ½ oz.
,, 23	5	8 a. m.	...	99·2	Purging, and a little easier than yesterday. No medicine.
,, ,,	...	6 p. m.	...	102·2	
,, 24	6	8 a. m.	...	68·2	Purging, with much mucus and no blood; drinks rice gruel; still difficulty in breathing. Sulphate of iron ... 1 dr. Embrocation to be applied on both sides of the chest.
,, ,,	...	6 p. m.	...	100·4	Has been drinking a little thin rice gruel; stools very watery, with viscid mucous flakes of aphtha and blood. Spt. nitr. eth. ... 1 oz. Tinct. opii ... ... 2 oz. Chalk ... ... 2 oz. Catechu ... ... 2 dr.
,, 25	7	8 a. m.	...	95·2	Animal is much worse; lying down and breathing hard; dying. Died at 11 a. m.

CASE No. 58.

Admitted 22nd December 1870.—*Result,* **died** 23rd December 1870.—A **bullock,** brought from village Serampore, reported 2 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 22	3	8 a. m.	...	...	Left off eating this morning; the owner states that it ate but little yesterday; the gums and buccal membrane are congested; has a large sore on neck; bowels only relaxed, but purging has not yet commenced; the muzzle is dry, and there is a slight discharge from eyes. Common salt ... ½ lb. Sulphur ... ... 2 oz. Ginger ... ... ½ oz. Turpentine ... ... ½ oz.
,, 23	4	8 a. m.	...	...	Worse, and lying down; the bowels are very much constipated. Linseed oil ... ... 4 oz. Turpentine ... ... 2 oz. Croton oil ... ... 5 drops. Died at 9 a. m.

CASE No. 59.

Admitted 24th December 1870.—*Result*, **died** 29th December 1870.—A **cow**, brought from village Culna, reported 1 day ill.—*Condition*, **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and haracter.	Temperature.	Symptoms and Progress.
1870. December 24	2	8 a. m.	...	*Degrees.* ...	This animal is said to have gone 7 months in calf; the mucous membrane of the mouth is congested; the muzzle is dry; the animal looks dull, with drooping ears; it is not eating anything; the coat is staring; the dung is rather hard. Epsom salt ... ... 6 oz. Ginger ... ... ½ oz. Sulphur ... ... 1 oz.
,, ,,	...	6 p. m.	...	105·8	In the same state. Epsom salt ... ... 4 oz. Spt. nitr. eth. ... 1 oz.
,, 25	3	8 a. m.	..	104·6	Slightly better; injection given, and a small quantity of dark and very slimy dung voided. Common salt... ... 2 oz. Turpentine ... ... ½ oz. Linseed oil ... ... 2 oz.
,, ,,	...	6 p. m.	...	103·4	
,, 26	4	8 a. m.	...	103·8	Muzzle very dry; deep congestion of mucous membrane of mouth, which is hot; the breath is offensive and the throat sore; the coat is staring, and the animal has passed no dung. Give injection.
,, ,,	...	5 p. m.	...	104·8	Has passed a little dung with injections given 3 times during the day. Common salt ... ... 2 oz. Spt. nitr. eth. ... 1 oz. Continue injections.
,, 27	5	8 a. m.	...	104·6	Has purged once this morning; no mucus nor blood; there are, however, now several excoriations in the mouth, especially inside under-lip; throat very sore, coughing frequently. Common salt... ... 1 oz. In thin gruel.
,, ,,	...	6-30 p. m.	...	105·6	Medicine operating and the animal seems better.
,, 28	6	8 a. m.	...	103·8	Medicine has operated about 5 or 6 times; the dung is, however, free from blood or mucus, but it is very offensive; the animal has taken a little gruel and is very thirsty; it appears better. Sulphate of iron ... 1 dr.
,, ,,	...	6 p. m.	...	101·6	Very ill; great difficulty in breathing; dying. Died on the 29th.

CASE No. 60.

Admitted 24th December 1870.—*Result*, **died** 25th December 1870.—**A bullock,** brought from village Culna, reported 3 days ill.—*Condition*, **poor**.

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 24	4	8 a. m.	...	*Degrees.* ...	Stated by the owner to be purging for the last 2 days; the present symptoms are,—purging blood and mucus; mucous membrane of mouth congested; muzzle very dry; sticky discharge from eyes, nose, and mouth; coat staring. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz.
,, ,,	...	6 p. m.	...	102·	In the same state. Repeat dose.
,, 25	5	8 a. m.	...	96·8	Is lying down; is very weak and is purging; the dung being of a light green color, with flakes of mucus and aphtha, and very offensive. Continue medicine;—an hour afterwards give,— Catechu ... ... 2 dr. Chalk ... ... 2 oz. Tinct. opii ... ... 1 oz. Spt. nitr. eth. ... 2 oz. Died at 8-30 p. m.

CASE No. 61.

Admitted 24th December 1870.—*Result*, **died** 24th December 1870.—A **bullock**, brought from village Hatsimool, reported 3 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 24	4	8 a.m.	...	*Degrees.* ...	Very ill; the man who brought it to the hospital states that it has been purging for the last 3 days. The present symptoms are,—purging both blood and mucus; the condition of the gums is aphthous; the animal is very weak; there is sticky discharge from nose and mouth, the latter being very sore, and there is considerable difficulty in breathing. Catechu ... ... 2 dr. Chalk ... ... 2 oz. Tinct. opii ... ... 1 oz. Spt. nitr. eth. ... 2 oz. Embrocation on both sides.
„ „	...	6 p.m.	...	98·6	In the same state; dying. Repeat dose. Died at midnight.

CASE No. 62.

Admitted 24th December 1870.—*Result*, **died** 28th December 1870.—A **heifer**, brought from village Hatsimool, reported 5 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 24	6	8 a.m.	...	*Degrees.* ...	Reported to be purging and off feed 3 days; the present symptoms are,—muzzle very dry; viscid discharge from eyes, nose, and mouth; aphthous condition of gums; the animal is very weak, and is purging blood and mucus. Catechu ... .. 1 dr. Chalk ... ... 1 oz. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz.
„ „	...	6 p.m.	...	102·2	Discharge from nostrils consists of viscid ropy blood and mucus; has taken a little rice gruel. Repeat dose.
„ 25	7	8 a.m.	...	...	Much the same. Continue medicine.
„ „	...	6 p.m.	...	100·2	
„ 26	8	8 a.m.	...	99·2	Rather restless; very weak; the dung is of a dark-green color mixed with a slight amount of mucus and blood. Continue medicine.
„ „	...	5 p.m.	...	99·6	Has purged only once or twice during the day, and this very slightly. Repeat dose.
„ 27	9	8 a.m.	...	97·8	Still purging slightly; very weak; the sores in mouth are aphthous and very unhealthy. Sulphuric acid 1 dr. at once, and one hour hence repeat the astringent dose.
„ „	...	6 p.m.	...	98·8	Still purging. Continue medicine. Died on the 28th instant.

CASE No. 63.

Admitted 24th December 1870.—*Result,* **died** 25th December 1870.—A **cow,** brought from village Culna, reported 5 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 24	6	6 p. m.	...	*Degrees.* 104·2	Said to have been purging since yesterday. The present symptoms are,—the animal is very weak and lying down; the gums are much congested and tongue very much furred; muzzle is very dry; there is œdema under eyelids; the animal is purging blood and mucus. Catechu ... ... 2 dr. Chalk ... ... 2 oz. Tinct. opii ... ... 1 oz. Spt. nitr. eth. ... 2 oz.
„ 25	7	8 a. m.	...	93·	Dying.

CASE No. 64.

Admitted 24th December 1870.—*Result,* **discharged cured** 10th January 1871.—A **cow,** brought from village Culna reported 4 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 24	5	6 p. m.	...	*Degrees.* 103·8	Said to have been purging from this morning; muzzle very dry; viscid discharge from eyes and nose; gums and mucous membrane much congested; excoriations on floor of mouth, gums, and under lips; tongue much furred; animal very weak and lying down; vagina very much congested. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Tinct. opii. ... ... ½ oz. Spt. nitr. eth. ... 1 oz.
„ 25	6	8 a. m.	...	97·8	Animal in the same state. Repeat dose.
„ „	...	6 p. m.	...	101·2	
„ 26	7	8-35 a. m.	...	98·8	Animal a little better.
„ „	...	6 p. m.	...	103·2	Continue medicine, and give sulphuric acid 1 dr. at midday. Still purging. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz.
„ 27	8	8 a. m.	...	99·8	Not purging; feeding a little; dung soft; going on well. Linseed oil ... ... 4 oz. Turpentine ... ... ½ oz. In gruel.
„ „	...	6 p. m.	...	102·2	
„ 28	9	9-30 a. m.	...	100·2	Feeding; not purging; dung soft, but slimy; discharge from eyes, nose, and mouth continues; excoriations looking more healthy; animal better.
„ „	...	6 p. m.	...	103·8	Sulphate of iron 1 dr. morning and evening.
„ 29	10	10 a. m.	...	101·6	Doing well; feeding and drinking a little, but still great discharge from eyes and nose; dung soft.
„ „	...	6 p. m.	...	102·8	Repeat dose.
„ 30	11	8-30 a. m.	...	100·6	Still great discharge from eyes; dung soft; feeding and otherwise doing well. The animal went on improving and was discharged cured on the 10th instant.
„ „	...	6 p. m.	...	102·8	

CASE No. 65.

Admitted 26th December 1870.—*Result,* **died** 28th December 1870.—A **bullock,** brought from village Culna, reported 3 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
Dec. 26	4	8-40 a. m.	...	...	No purging; very dull, shivering; muzzle dry; ears drooping; œdema around the lower eyelids; congestion of gums and slight excoriation on the floor of the mouth; sore throat; no eruptions; bowels constipated. Has great difficulty in passing dung, which is very hard and coated with blood and mucus. Injection at once. Magnesia sulph. ... 1 lb. Sulphur ... ... 2 oz. Ginger ... ... 1 oz.
„ „	...	5 p. m.	...	...	Not eaten anything; has passed a little dung with injection three times during the day. Linseed oil ... ... 3 oz. Turpentine ... ... ½ oz. And continue injection.
„ 27	5	8 a. m.	...	...	Gums slightly excoriated; much the same as yesterday. Continue injection. Common salt ... 2 oz. Spt. eth. nitr. ... 1 oz.
„ „	...	6 p. m.	...	...	
„ 28	6	9 a. m.	...	...	Has purged several times dysenteric and very offensive stools; does not eat or drink. Ammon. carb. ... 2 dr. In gruel.
„ „	...	6-30 p. m.	...	...	Very weak, ill, and purging. Catechu ... ... 2 dr. Tinct. opii ... ... 1 oz. Chalk ... ... 2 oz. Spt. eth. nitr. ... 2 oz. Died at midnight on 28th December 1870.

CASE No. 66.

Admitted 20th December 1870.—*Result,* **discharged cured** 28th December 1870.—A **heifer,** brought from village Culna, reported 3 days ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 25	4	6 p. m.	...	103·2	Discharge from eyes and nose; animal very dull; coat staring; no eruption; lying down a great deal; looks round to its flank; has not commenced to purge. Common salt ... ... 2 oz. Spt. nitr. eth. ... 1 oz.
„ 26	5	8 a. m.	...	101·2	Animal in the same state. Epsom salt ... ... 4 oz. Spt. nitr. eth. ... 1 oz
„ „	...	5 p. m.	...	101·8	Has taken some rice gruel and green grass. No medicine.
„ 27	6	8 a. m.	...	101·	Feeding a little; dung soft; going on well. Common salt ... ... 2 oz. Spt. nitr. eth. ... 1 oz.
„ „	...	6 p. m.	...	101·8	
„ 28	7	8 a. m.	...	102·2	Going on well.
„ „	...	6 p. m.	...	...	Discharged at the request of the proprietor with 12 tonic powders.

CASE No. 67.

Admitted 27th December 1870.—*Result,* **discharged cured** 10th January 1871.—A **cow,** brought from village Culna, reported 3 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 27	4	6 p. m.	...	102·8	Purging dysenteric stools; excoriation of mouth and under-lip; viscid discharge from eyes, nose, and mouth. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Spt. nitr. eth. ... 1 oz. Tinct. opii ... ... ½ oz.
„ 28	5	8 a. m.	...	101·2	Animal better; feeding, but still purging.
„ „	...	6 p. m.	...	101·8	Repeat medicine and give 1 dr. sulphuric acid at midday.
„ 29	6	8 a. m.	...	102·6	Not purging, but dung very soft; feeding a little; doing well. Common salt ... ... 2 oz. Turpentine ... ... ½ oz.
„ „	...	6 p. m.	...	103·4	Linseed oil ... ... 2 oz. in gruel.
„ 30	7	8-30 a. m.	...	101·2	Passing blood and mucus with soft dung, but feeding pretty well. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Spt. nitr. eth. ... ... 1 oz. Tinct. opii ... ... ½ oz.
„ „	...	6 p. m.	...	101·6	Slightly purging, but no blod or mucus. Repeat dose.
„ 31	8	8-10 a. m.	...	101·8	Going on well. Sulphate of iron 1 dr. morning and evening; sulphuric acid 1 dr. midday.
„ „	...	6 p. m.	...	102·4	Motions dysenteric.
1871.					
January 1	9	8 a. m.	...	102·2	Feeding well; dung of a dark-green color.
„ „	...	6 p. m.	...	102·6	Repeat dose.
„ 2	10	8 a. m.	...	101·8	Dung still of a dark-green color and slimy, but the animal is evidently doing well. Continue medicine.
„ „	...	6 p. m.	...	102·4	Purging, a little more. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Spt. nitr. eth. ... 1 oz. Tinct. opii ... ... ½ oz.
„ 3	11	8 a. m.	...	102·2	Doing well; dung of little more consistence.
„ „	...	6 p. m.	...	102·4	Repeat medicine. In this way the animal began to improve, and on the 10th instant was discharged perfectly cured.

CASE No. 68.

Admitted 28th December 1870.—*Result,* **discharged cured** 21st January 1871.—A **bullock,** brought from village Culna, reported 4 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 28	5	8 a. m.	...	...	Is stated to have been off feed and purging 3 days; the gums are excoriated, as also the buccal membrane.
„ „	...	...	...	103·8	Carbonate of ammonia 1 dr. with gruel, and an hour after common salt 2 oz. in rice gruel.
„ „	...	6 p. m.	...	...	The animal is very weak and purging. Catechu ... ... 2 dr. Chalk ... ... 2 oz. Tinct. opii ... ... 1 oz. Spt. nitr. eth. ... 2 oz.
„ 29	6	8 a. m.	...	100·8	Continues very weak, and is still purging; has taken a little gruel. Repeat dose.
„ „	...	6 p. m.	...	101·8	Still purging. Continue medicine.

CASE No. 68—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
December 30	7	8 a.m.	...	100·8	The animal appears a little easier; discharge from eyes most profuse; there are excoriations inside the mucous membrane of eyelids, and the gums and mucous membrane are fissured with extensive excoriations and aphthous ulcers; the animal is still purging; weak and lying down. Medicines as yesterday.
„ „	...	5 p.m.	...	102·8	Has fed a little to-day; the bowels have improved, the dung being free from blood; and there is little mucus. Medicine as yesterday.
„ 31	8	8 a.m.	...	102·2	A little purging, but altogether seems to be a little better. Repeat dose now, and give another half an hour after.
„ „	...	6 p.m.	...	102·6	Purging not yet stopped. Continue medicine.
1871. January 1	9	8 a.m.	...	103·4	There is much subcutaneous congestion seen on dewlap by transmitted light; also by the same light the skin is seen generally tinted, and there are eruptions here and there of the size of a grain seed. These eruptions consist of desquamation of cuticle, which on being removed leaves a pit. The animal is taking rice gruel and plantain leaves; there is still profuse discharge from eyes and nose; the eyelids are closed; the muzzle is moist, and there is a deep congestion of the conjunctiva; the animal is not so weak as yesterday, and is purging little mucus, but no blood.
„ „	...	6 p.m.	...	105·4	Sulphate of iron 1 dr. morning and evening. Sulphuric acid 1 dr. at midday.
„ 2	10	8 a.m.	...	103·6	Is much better; the eyelids partially now opened, and excoriations of conjunctiva lining the lids are manifested; and on both eyes, specially at the near eye, there is ulceration of the cornea; is feeding a little, and the dung appears to be more solid; the eruptions on the dewlap are more evident, specially as the rising sun striking the dewlap, rendering it semi-transparent, allows the observer to see the general subcutaneous tinting, and the small patches of eruptions causing desquamation of cuticle which leaves pits; aphthous deposit on the upper lip remains abundant. Medicine as yesterday.
„ „	...	6-30 p.m.	...	103·4	The animal is still purging, and is very weak. Catechu ... ... 4 dr. Chalk ... ... 4 oz. Tinct. opii ... ... 2 oz. Spt. nitr. eth. ... 4 oz.
„ 3	11	8 a.m.	...	103·2	Taking a little rice gruel, and purged only once during the night; there is great discharge from eyes, with excoriations of eyelids; has now purged profusely, the dung being of a pale yellow color, with blood and mucus. Give half quantity of last evening's medicine and apply tinct. opii and oil inside the eyelids, and apply a cloth over the eye.
„ „	...	6 p.m.	...	102·4	Still purging. Catechu ... ... 2 dr. Chalk ... ... 2 oz. Tinct. opii ... ... 2 oz. Spt. nitr. eth. ... 2 oz.
„ 4	12	8 a.m.	...	102·4	Has purged twice during the night; the owner has brought in some fresh grass, which it eats. Repeat dose; the eyes to be carefully cleaned morning and evening and dressed with tinct. opii and linseed oil.
„ „	...	6 p.m.	...	100·6	Feeding a little and looks better, but is still purging a little blood; has passed no dung; tenesmus. Inject linseed oil with tinct. opii, and give 1 bottle of linseed gruel.
„ 5	13	8 a.m.	...	100·4	Still passes blood of a bright red color; the inside of the thighs and tail is besmeared with blood; eyes continue to be closed, and on the cornea and eyelids are several aphthous ulcers. Spt. nitr. eth. ... 1½ oz. Extract hyoscyamus ... 1 dr. in gruel. Give a small injection occasionally of thick linseed gruel with tinct. opii.
„ „	...	6 p.m.	...	101·6	Still passes blood of a bright red color; the inside of the thighs and tail. is besmeared with blood; eyes continue to be closed, and on the cornea and eyelids are several aphthous ulcers. Continue medicine and give injection of 2 oz. linseed oil and 3 dr. tinct. opii.
„ 6	14	8 a.m.	...	100·2	Feeding; much better; not so much tenesmus.
„ „	...	6 p.m.	...	102·6	Spt. nitr. eth. ... 1½ oz. Ext. hyoscyamus ... 1 dr. Gum acaciæ ... ... ½ oz. Injection with oil and tinct. opii.

CASE No. 68—*concluded.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 7	15	8 a.m.	...	100·8	Feeding. Continue yesterday's medicine.
,, ,,	...	6 p.m.	...	102·6	Has passed a little blood and soft dung; is feeding, but is very weak. Spt. nitr. eth. ... 1 oz. Camphor ... ... 2 dr.
,, 8	14	8 a.m.	...	101·4	The dung is very soft, and there is some slight mucus with very faint traces of blood; feeding better, but still very weak. Ex. hyoscyamus ... 1 dr. Gum acaciæ ... ... 1 oz. Spt. nitr. eth. ... 1½ oz.
,, ,,	...	6 p.m.	...	102·4	
,, 9	17	8 a.m.	...	101·2	Doing well, and is feeding; the dung is soft, of a green color, and free from blood; it is, however, slightly coated with mucus; there are a few crusts of desquamation of cuticle on the dewlap; the animal is very much reduced in condition, indeed is all but a skeleton; as it is feeding well, and the bowels are in fair order, it is hoped that it will recover. In this way the animal began to improve day by day, had sulphate of iron 1 dr. morning and evening, and was discharged completely cured on the 21st instant.
,, ,,	...	6 p.m.	...	102·4	

CASE No. 69.

Admitted 29th December 1870.—*Result,* **discharged cured** 18th January 1871.—A **bullock,** brought from village Culna, reported 3 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 29	4	8 a.m.	...	103·2	Off feed from yesterday; there is discharge from eyes, nose, and mouth; the bowels are constipated; the animal is very dull; there are slight excoriations of mouth, the mucous membrane of which is much congested; with injection, hard balls of dung are now passed, the same being coated with blood and mucus. Epsom salts... ... 4 oz. Ginger ... ... ½ oz. Sulphur ... ... 2 oz. Injection every two hours.
,, ,,	...	6 p.m.	...	103·8	
,, 30	5	8 a.m.	...	101·2	Passing clay-colored, soft dung. Repeat dose and give at midday— Sulphuric acid ... ... 1 dr.
,, ,,	...	6 p.m.	...	102·8	The dung is soft, darker, and not so clay-colored; the animal has not fed to-day, and shows unfavorable symptoms; the throat is very sore. Spt. nit. eth. ... 1 oz. Camphor ... ... 2 dr. Injection.
,, 31	6	8 a.m.	...	101·4	Passed a little dung during the night. There is considerable œdema under lower jaw; give injection now to see the state of the bowels. Passed a little dung of clay color.
,, ,,	...	6 p.m.	...	102·8	In the same state. Give epsom salts 2 oz. in warm water.
1871.					
January 1	7	8 a.m.	...	100·2	Appears to be better, but is still very weak. Its muzzle remains very dry, and is lying down; the bowels are relaxed, the dung being of a clay color and slightly tinged with blood and mucus; not feeding. Give carbonate of ammonia 2 dr. now, and sulphuric acid 1 dr. at midday.
,, ,,	...	6 p.m.	...	103·0	Appears to be better, but is still very weak; its muzzle remains very dry, and is lying down; the bowels are relaxed, the dung being of a clay color and slightly tinged with blood and mucus; not feeding. Common salt 2 oz., and afterwards camphor 2 dr.
,, 2	8	8 a.m.	...	101·2	Bowels are still constipated, and the dung is covered with blood and mucus; as the animal is old and weak, it is deemed prudent not to give purgatives, as, if purgation once sets in, no doubt the animal will die much œdematous swelling exists around the eyes and under the jaw. Give common salt 2 oz., and half an hour after, camphor 2 dr., spt. nitr. eth.; 1 oz. Injections 4 or 5 times during the day.
,, ,,	...	6 p.m.	...	101·6	
,, 3	9	8 a.m.	...	99·2	Feeding, and on the whole doing well.
,, ,,	...	6 p.m.	...	101·2	

CASE No. 69—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 4	10	8 a. m.	...	100·8	Repeat dose.
,, ,,	...	6 p. m.	...	100·8	Doing well; the dung is soft and darker in color. Give sulphate of iron 1 dr. morning and evening; sulphuric acid 1 dr. at midday.
,, 5	11	8 a. m.	...	101·4	Doing well. Continue medicine.
,, ,,	...	6 p. m.	...	101·2	The bowels are constipated. Linseed oil ... ... 4 oz. Epsom salt ... ... 2 oz. Turpentine ... ... ½ oz. in gruel.
,, 6	12	8 a. m.	...	101·4	Bowels are still constipated.
,, ,,	...	6 p. m.	...	101·8	Injection given and hard dung passed. Continue injections.
,, 7	13	8 a. m.	...	101·2	To have—Common salt 2 oz. in linseed gruel.
,, ,,	...	6 p. m.	...	103·6	Dung not so hard, still not soft. Common salt ... 2 oz. Linseed oil ... ... 1 oz.
,, 8	14	8 a. m.	...	100·4	Doing well.
		6 p. m.	...	102·8	Repeat dose.
,, 9	15	8 a. m.	...	100·8	Doing well.
,, ,,	...	6 p. m.	...	102·8	Repeat dose.
,, 10	16	...	...	...	Has recovered, and is discharged.

CASE No. 70.

Admitted 29th December 1870.—*Result,* **died** at 8 P. M. the same day.—A **bullock,** brought from village Culna, reported 4 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 29	5	8 a. m.	...	101·2	Has been brought to the hospital very ill. It is purging flakes of mucus with clots of blood; the muzzle is dry and the mouth is hot; the coat is staring and the animal has fever, and there is some difficulty in swallowing, the gums being congested and slightly excoriated. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz. Catechu ... ... 1 dr. Chalk ... ... 1 oz.
,, ,,	...	6 p. m.	...	100·6	Very much worse; mouth cold, and the animal is passing blood. Spt. nitr. eth. ... 2 oz. Camphor ... ... 2 dr. Died at 8 p. m.

CASE No. 71.

Admitted 3rd January 1871.—*Result,* **discharged cured** 21st January 1871.—A **bullock,** brought from village Culna, reported 5 days ill.—*Condition* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 3	6	8 a. m.	...	101·2	Is shivering, having a dry and fissured muzzle, cold mouth, and discharge from nose and mouth, with excoriations and concretions of aphtha on gums and inside of upper lip; the bowels are very constipated, and the animal has passed no dung during the night; dung passed with injection with great difficulty in small hard pellets; the mucous membrane of rectum is quite dry. Not feeding or drinking.
,, ,,	...	6 p. m.	...	102·8	Has passed a little dung with every injection given during the day. Injections every 2 hours. Linseed oil ... ... 4 oz. Common salt ... 2 oz. Spt. nitr. eth. ... 1 oz.

CASE No. 71—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 4	7	8 a. m.	...	102·8	The patient only passes dung with injection, and the dung passed continues very hard. Repeat dose and continue giving injections every 2nd hour.
,, ,,	...	6 p. m.	...	102·6	Lying down; passes dung only with injection; has not fed; with the injection now given softer dung is passed. Give another injection at once. Spt. nitr. eth. ... 1 oz. Camphor ... ... 2 dr.
,, 5	8	8 a. m.	...	100·8	Has purged a little during the night; the gums and the greater portion of the entire mucous membrane of the mouth are very much excoriated and the breath is most offensive; the dung passed also is excessively offensive the animal is lying down, is very weak, and eats nothing. Linseed oil ... ... 3 oz. Spt. nitr. eth. ... 1 oz.
,, ,,	...	6 p. m.	...	102·2	
,, 6	9	8 a. m.	...	101·2	A little better; passes dung, but it is not very soft; feeds a little. Linseed oil ... ... 2 oz. Epsom salt ... ... 2 oz. Spt. nitr. eth. ... 1 oz.
,, ,,	...	6 p. m.	...	104·2	
,, 7	10	8 a. m.	...	102·8	The urethra and sheath are very much swollen; the prepuce also is much congested; there is a viscid discharge from, and excoriations and aphthous condition of, the penis; dung soft; feeding a little. Repeat medicine and inject warm water into the sheath twice a day, and afterwards linseed oil with carbolic acid, 1 part of the latter to 40 of the former.
,, ,,	...	6 p. m.	...	103·8	
,, 8	11	8 a. m.	...	104·2	Doing well and feeding a little; the dung is very soft. Linseed oil ... ... 1 oz. Epsom salt ... ... 1 oz. Spt. nitr. eth. ... 1 oz.
,, ,,	...	6 p. m.	...	104·8	
,, 9	12	8 a. m.	...	101·6	The aphthous ulcers in the mouth are still very extensive and fissure like covered with a dense layer of yellow aphtha, especially inside both lips and at the corners of the mouth; dung is soft, with only a very faint trace of mucus; feeding well; strict injunctions are given for the animal to have a small amount of soft food; in this way the patient, with tonics noted below, improved day by day, and was discharged perfectly cured on the 21st instant. Sulphate of iron 1 dr. morning and evening, and sulphuric acid 1 dr. in thin gruel at midday.
,, ,,	...	6 p. m.	...	102·8	

CASE No. 72.

Admitted 3rd January 1871.—*Result,* **discharged cured** 17th January 1871.—A **heifer,** brought from village Culna, reported 5 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 3	6	8 a. m.	...	...	Reported to be purging for the last 4 days; has discharge from eyes and nose; has a very dry muzzle, and the coat is staring; is purging blood and mucus; the vagina is very much congested, and there is a large aphthous ulcer just within the lips; the gums, buccal membrane, and hard palate are excoriated, and the gums are encrusted with aphthous concretion. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz. Catechu ... ... 1 dr. Chalk ... ... 1 oz.
,, ,,	...	6 p. m.	...	103·2	
,, 4	7	8 a. m.	...	101·8	Has purged once only during the night; drinks a little rice gruel. Repeat medicine.
,, ,,	...	6 p. m.	...	102·8	Has not purged during the day; has taken a little gruel and green grass. Give 1 quart of very thick linseed gruel.
,, 5	8	8 a. m.	...	101·8	Appears a little better; purges still a little. Repeat medicine.
,, ,,	...	6 p. m.	...	102·8	Going on well. Spt. nitr. eth. ... ... 1 oz. Camphor ... ... 2 dr.

CASE No. 72—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 6	9	8 a. m.	...	101·4	Patient looking better; dung soft and covered with mucus.
„ „	...	6 p. m.	...	102·2	Give common salt 1 oz. in gruel, half linseed and half rice.
„ 7	10	8 a. m.	...	101·6	Better; purging a little.
„ „	...	6 p. m.	...	102·6	Continue salt and gruel twice a day.
„ 8	11	8 a. m.	...	102·8	Muzzle very dry; purging, but without mucus or blood; spine tender on being pressed; not feeding.
„ „	...	6 p. m.	...	103·6	Spt. nitr. eth. ... ... 1 oz. Camphor ... ... 2 dr.
„ 9	12	8 a. m.	...	101·2	Purging, with mucus and blood; feeds very little. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... ... 1 oz. Catechu ... ... 1 dr. Chalk ... ... 1 oz.
„ „	...	6 p. m.	...	102·8	Still purging. Repeat medicine.
„ 10	13	8 a. m.	...	101·6	A little better; still purging. Ext. hyosciamus ... ½ dr. Spt. nitr. eth. ... ... 1 oz.
„ „	...	6 p. m.	...	102·6	Still purging a little. Repeat medicine.
„ 11	14	8 a. m.	...	101·4	Not purging; feeding better.
„ „	...	6 p. m.	...	102·8	Common salt ½ oz. in linseed and rice gruel 3 times a day.
„ 12	15	8 a. m.	...	101·2	Doing well.
„ „	...	6 p. m.	...	102·2	Repeat medicine.
„ 13	16	8 a. m.	...	100·8	Doing very well. Repeat medicine.
„ „	...	6 p. m.	...	102·6	The animal continued gradually to improve, and was discharged cured on the 17th.

CASE No. 73.

Admitted 4th January 1871.—*Result*, **discharged cured** 16th January 1871.—A **cow-calf**, brought from village Culna, reported 1 day ill.—*Condition*, **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 4	2	8 a. m.	...	101·4	Discharge from eyes and nose; muzzle dry and gums congested, and in two or three places excoriated and aphthous. Linseed oil ... ... 1 oz. Spt. nitr. eth. ... ½ oz. In thin rice gruel.
„ „	...	6 p. m.	...	103·8	Has not passed any dung since this morning, and is in great pain, and moans. Give injections and repeat dose.
„ 5	3	8 a. m.	...	101·4	Gums are very much congested and excoriated; the animal, however, looks a little better; not moaning so much as she did last evening; has eaten a little bran mash; the vagina is very much congested, with aphthous deposit; no dung passed during night; injections given and dung passed covered with slime, and very offensive in odour.
„ „	...	6 p. m.	...	101·2	No medicines, but injections every 3rd hour.
„ 6	4	8 a. m.	...	101·4	The animal is better.
„ „	...	6 p. m.	...	101·8	Linseed oil ... ... 1 oz. Spt. nitr. eth. ... ½ oz. In linseed gruel.
„ 7	5	8 a. m.	...	101·4	Doing well.
„ „	...	6 p. m.	...	101·2	Common salt 2 dr. with gruel, half linseed and half rice.
„ 8	6	8 a. m.	...	101·2	Feeds a little; the dung is soft and of a healthy color. Common salt ½ oz. morning and evening in linseed gruel.
„ „	...	6 p. m.	...	102·8	Improved day by day, and was discharged cured on the 16th instant with 12¼ dr. sulphate of iron powders.

CASE No. 74.

Admitted 4th January 1871.—*Result,* **died** 7th January 1871.—A **cow,** brought from village Culna, reported 3 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 4	4	8 a. m.	...	105·2	The owner states that purging has not yet commenced; the coat is staring; gums are congested, with slight discharge from mouth, but no discharge from the eyes or nose; eats but very little; the dung is soft. Epsom salt ... ... 3 oz. Sulphur ... ... ½ oz. Ginger ... ... ½ oz.
„ „	...	6 p. m.	...	104·6	Not feeding; has passed no dung; given injection at once; with injection small hard balls of dung are passed. Repeat medicine.
„ 5	5	8 a. m.	...	101·4	Feeding a little; has not passed dung.
„ „	...	6 p. m.	...	103 4	Give injections 3 times during the day, and common salt 2 oz. in rice gruel.
„ 6	6	8 a. m.	...	102·2	Purging; passing with dung blood and mucus. Linseed oil ... ... 3 oz. Spt. nitr. eth. ... 1 oz. In thick linseed gruel.
„ „	...	6 p. m.	...	101·4	Is very much worse and passes profuse dysenteric stools; has eaten nothing. Tinct. opii ... ... 1 oz. Catechu ... ... 2 dr. Spt. nitr. eth. ... 1 oz. Chalk ... ... 2 oz.
„ 7	7	8 a. m.	...	93·6	Purging frequently and passing much blood and mucus, indeed only blood and mucus; slight prolapsus of anus and vagina. Repeat dose and give injections of linseed oil and tinct. opii in anus and vagina.
„ „	...	6 p. m.	...	99·8	Is worse; there is much tenesmus, and blood and mucus are frequently passed. Died.

CASE No. 75.

Admitted 4th January 1871.—*Result,* **discharged cured** 16th January 1871.—A **heifer,** brought from village Culna, reported 1 day ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 4	2	8 a. m.	...	101·2	Feeding a little; dung soft; coat staring; gums congested, with aphthous excoriations; there is discharge from eyes and nose, and the muzzle is dry. Linseed oil ... ... 2 oz. Epsom salt ... ... 1 oz. Ginger ... ... 2 dr. In thin rice gruel.
		6 p. m.	...	102 8	Has passed no dung; injections are given, but no dung is passed. Linseed oil ... ... 1 oz. Epsom salt ... ... ½ oz. Ginger ... ... 1 dr. In thin rice gruel. Continue injections.
„ „	...				
„ 5	3	8 a. m.	...	100·8	Soft dung has been passed during the night, and the animal eats a little green grass.
„ „	...	6 p. m.	...	101·6	Give common salt 4 oz. in a bottle of linseed gruel.
„ 6	4	8 a. m.	...	101·2	Going on well; the dung is soft.
„ „	...	6 p. m.	...	102·2	Repeat medicine.
„ 7	5	8 a. m.	...	101·8	Purging liquid dung and mucus, but no blood. Give common salt 1 oz. in one bottle of thick linseed gruel.
„ „	...	6 p. m.	...	103·8	Slightly purging; has not eaten anything all day. Spt. nitr. eth. ... ½ oz. Camphor ... ... 1 dr.

CASE No. 75—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 8	6	8 a. m.	...	100·8	The dung is soft and coated with mucus; looks dull, and there is discharge from eyes; the throat is sore, and there is difficulty in swallowing.
„ „	...	6 p. m.	...	102·4	Epsom salt ... ... 1 oz. Spt. nitr. eth. ... 1 oz. Linseed oil ... ... 1 oz.
„ 9	7	8 a. m.	...	100·4	Better, and feeding a little.
„ „	...	6 p. m.	...	102·6	Common salt 1 oz. in linseed gruel.
„ 10	8	8 a. m.	...	101·2	Improving.
„ „	...	6 p. m.	...	102·2	Common salt 1 oz. in linseed gruel.
„ 11	9	8 a. m.	...	100·6	Better; the dung is of a healthy color.
„ „	...	6 p. m.	...	102·6	Common salt ½ oz. in a pint of rice gruel 3 times a day.
„ 12	10	8 a. m.	...	100·6	Doing well.
„ „	...	6 p. m.	...	102·2	Give sulphate of iron ½ dr. morning and evening.
„ 13	11	8 a. m.	...	101·0	Going on well and feeding; the dung is soft, but healthy-looking.
„ „	...	6 p. m.	...	102·6	Repeat dose.
„ 14	12	8 a. m.	...	101·2	Going on well and feeding; the dung is soft, but healthy-looking.
„ „	...	6 p. m.	...	102·8	Repeat dose.
„ 15	13	8 a. m.	...	100·8	Doing well and feeding.
„ „	...	6 p. m.	...	101·6	Continue medicine.
„ 16	14	8 a. m.	...	...	Discharged cured.

CASE No. 76.

Admitted 5th January 1871.—*Result,* **died** 8th January 1871.—A **cow-calf,** brought from village Culna, reported 2 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 5	3	6 p. m.	..	100·8	The muzzle is dry, and there is discharge from nose and mouth; the gums are very much congested and aphthous. The coat is staring and the back is arched; the animal is passing dysenteric stools; the owner states that purging has set in from last night; has sore throat; coughs, and eats nothing. Linseed oil... ... 1 oz. Epsom salt ... ½ oz. In thin rice gruel.
„ 6	4	8 a. m.	...	100·6	Not feeding; very sore throat.
„ „	...	6 p. m.	...	103·4	The animal is coughing and purging blood and mucus. Linseed oil ... ... 1 oz. Spt. nitr. eth. ... ½ oz. Tinct. opii ... ... 2 dr.
„ 7	5	8 a. m.	...	100·2	Little easier and better.
„ „	...	6 p. m.	...	104·6	Spt. nitr. eth. ... ½ oz. Camphor ... ... ½ dr. In thin gruel.
„ 8	6	8 a. m.	...	101·2	Animal not so well as before; is not known whether it passed dung during the night or not; injection given and liquid dung passed. Repeat dose.
„ „	...	6 p. m.	...	102·4	Animal worse. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz. Catechu ... ... 1 dr. Chalk ... ... 1 oz. Half to be given now, the other half in two hours. Died at midnight.

CASE No. 77.

Admitted 6th January 1871.—*Result*, **died** 7th January 1871.—A **cow-calf,** brought from village Culna, reported 4 days ill.—*Condition*, **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 6	5	8 a. m.	...	101·2	Purging, and is off feed; deep congestion and excoriation of gums, upper lips, and hard palate; the muzzle is very dry, and there is discharge from eyes, nose, and mouth, and a large œdematous swelling under lower jaw and throat.
„ „	...	6 p. m.	...	102·8	Linseed oil ... ... 1 oz. Epsom salt ... ... 1 oz. Spt. nitr. eth. ... ½ oz.
„ 7	6	8 a. m.	...	100·4	The animal seems worse; is very weak and purging watery mucus. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz. Catechu ... ... 1 dr. Chalk ... ... 1 oz. half to be given now, the other half in two hours.
„ „	...	6 p. m.	...	94·2	Dying. Died at 8 p. m.

CASE No. 78.

Admitted 8th January 1871.—*Result*, **discharged cured** 22nd January 1871.—A **cow,** brought from village Culna, reported 2 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 8	3	6 p. m.	...	...	Off feed; has discharge from eyes, nose, and mouth; coat staring; dull; has not yet commenced to purge; dung soft and coated with mucus. Linseed oil ... ... 2 oz. Epsom salt ... ... 2 oz. In a quart of warm gruel.
„ 9	4	8 a. m.	...	100·4	The animal as yet does not show any signs of rinderpest; she quids her
„ „	...	6 p. m.	...	101·8	food, and masses of half masticated food are found in the mouth: the mouth is washed out and examined, but no sores are found; the throat is sore; the animal is dull, and coat staring, with drooping ears; breath sweet, but now and then a few spasmodic twitchings are to be noticed. Linseed oil ... ... 4 oz. Epsom salt ... ... 2 oz. Turpentine ... ... ½ oz.
„ 10	5	8 a. m.	...	100·8	Dung hard and coated with mucus; muzzle dry; feeding well.
„ „	...	6 p. m.	...	101·8	Repeat dose and give injection every hour.
„ 11	6	8 a. m.	...	100·	A small quantity of hard balls passed with injection Linseed oil ... ... 2 oz. Epsom salt ... ... 2 oz. Ginger ... ... ½ oz.
		6 p. m.	...	99·2	Passes a little hard dung now with injection; has not fed well. Linseed oil ... ... 2 oz. Epsom salt ... ... 1 oz. Turpentine ... ... 2 dr.
„ 12	7	8 a. m.	...	100·4	Dung still little hard, but is passed without injection. Repeat dose.
		6 p. m.	...	102·4	Not feeding. Common salt 1 oz. in rice gruel.
„ 13	8	8 a. m.	...	101·6	Muzzle very dry; animal looking dull; passed a little soft dung; does not
„ „	...	6 p. m.	...	102·2	feed; injection given and the animal passed some hard dung in balls. Common salt in linseed gruel.
„ 14	9	8 a. m.	...	101·4	Gums slightly congested; feeding a little; dung a little soft.
„ „	...	6 p. m.	...	103·4	Repeat common salt dose.

CASE No. 78—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 15	10	8 a. m.	...	101·8	Looks dull; not feeding well; dung soft. Repeat common salt.
„ „	...	6 p. m.	...	102·4	Looks dull; not feeding well; dung soft. Linseed oil ... ... 2 oz. Epsom salt ... ... 1 oz. Spt. nitr. eth. ... 1 oz.
„ 16	11	10 a. m.	...	101·6	Looks dull; not feeding well; dung soft; scab-like desquamation on dewlap. Medicine as yesterday, but give 4 oz. of oil instead of 2.
„ „	...	6 p. m.	...	102·4	Looks dull; not feeding well; dung soft. Linseed oil ... ... 3 oz. Common salt ... 2 oz. Spt. nitr. eth. ... 1 oz.
„ 17	12	8 a. m.	...	100·8	Hard dung passed with injection. Injection every hour; common salt 1 oz. in thin rice gruel.
„ „	...	6 p. m.	...	103·4	Has passed dung with injection 3 times during the day; drinks a little thin gruel. Common salt ... ... 2 oz. Spt. nitr. eth. ... 1 oz. In thin gruel. Continue injections.
„ 18	13	8 a. m.	...	102·6	Viscid discharge from eyes and nose; œdema around lower eyelids; has passed dung during night. Country spirit ... ... 1 oz. Camphor ... ... 1 dr. in gruel.
„ „	...	6 p. m.	...	101·	
„ 19	14	8 a. m.	...	100·	Feeding a little; bowels in good order. Repeat medicine morning and evening; and sulph. of iron 1 dr. at midday
„ „	...	6 p. m.	...	101·8	
„ 20	15	8 a. m.	...	100·2	Better in every respect. Sulphate of iron ½ dr. morning and evening.
„ „	...	6 p. m.	...	101·8	
„ 21	16	8 a. m.	...	101·2	Doing well. Continue medicine; linseed gruel 2 or 3 bottles with ½ oz. common salt in each bottle.
„ „	...	6 p. m.	...	102·2	
„ 22	16	8 a m.	...	...	Discharged cured.

CASE No. 79.

Admitted 9th January 1871.—*Result,* **discharged cured** 21st January 1871.—**A bullock,** brought from village Culna, reported 2 days ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 9	3	9 a. m.	...	104·2	Feeds but little; muzzle dry; animal dull; gums congested; tongue furred mouth hot; coat staring; discharge from nose. Linseed oil ... ... 4 oz. Epsom salt ... ... 4 oz. Turpentine ... ... ½ oz.
„ „	...	6 p. m.	...	105·8	
„ 10	4	8 a. m.	...	103·8	Viscid discharge from nose; breath offensive; very dull; coat staring; gums excoriated; prepuce and penis congested; purged yesterday and during night. Common salt 1 oz. in linseed gruel.
„ „	...	6 p. m.	...	105·4	Repeat morning dose and give injection.
„ 11	5	8 a. m.	...	101·8	Passed no dung during night, but passed a little with injection this morning; discharge from nose and mouth very viscid, the latter very sore; the dung is very slightly tinged with mucus and blood; urine red; just passed a small quantity of soft dung coated with blood. Linseed oil ... ... 4 oz. Epsom salt ... ... 2 oz. Spt. nitr. eth. ... 1 oz. In thin gruel.
„ „	...	6 p. m.	...	102·6	Passed a little soft dung, without injection, coated with blood; tongue very much furred; is taking gruel, but not grass. Common salt 1 oz. in a pint of linseed gruel.

CASE No. 79—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 12	6	8 a. m.	...	100·6	Dung soft.
„ „	...	6 p. m.	...	101·8	Repeat dose of common salt.
„ 13	7	8 a. m.	...	100·2	Doing well.
„ „	...	6 p. m.	...	101·4	Repeat dose.
„ 14	8	8 a. m.	...	100·4	Dung little soft; feeding well.
„ „	...	6 p. m.	...	101·6	Sulphate of iron 1 dr. morning and evening.
„ 15	9	8 a. m.	...	100·2	Improving.
„ „	...	6 p. m.	...	101·2	Repeat dose.
„ 16	10	10 a. m.	...	103·6	Doing well.
„ „	...	6 p. m.	...	103·2	Repeat dose.
„ 17	11	8-30 a. m.	...	105·2	Muzzle very dry; dung healthy; not feeding this morning. Common salt... ... 4 oz. Linseed oil ... ... 4 oz.
„ „	...	6 p. m.	...	105·6	Has purged 4 times during the day; feeding a little.
„ 18	12	8 a. m.	...	104·6	Not feeding well; dull; dung soft.
„ „	...	6 p. m.	...	105·2	Linseed oil ... 4 oz. Sulphate of soda ... 1 oz. Country spirit ... 2 oz.
„ 19	13	8 a. m.	...	104·8	Feeding better; gums much congested; mouth hot. Common salt 1 oz. in linseed gruel morning and midday.
„ „	...	6 p. m.	...	105·2	Dung softer; feeding a little; muzzle rather dry. Linseed oil ... ... 3 oz. Sulphate of soda ... 1 oz. Country spirit ... 2 oz.
„ 20	14	8 a. m.	...	103·4	Dung softer; feeding better.
„ „	...	6 p. m.	...	104·8	Linseed oil... ... 2 oz. Sulphate of soda ... 1 oz. Country spirit ... 1 oz.
„ 21	15	9 a. m.	...	...	Doing well. The owner being desirous of taking the animal home, it is discharged cured with 12 tonic powders.

CASE No. 80.

Admitted 12th January 1871.—*Result,* **discharged cured** 25th January 1871.—**A heifer,** brought from village Culna, reported 1 day ill.—*Condition,* **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 12	2	6 p. m.	...	105·2	Coat staring; gums congested; mouth hot; muzzle dry; slight tremor; dung hard; tongue furred; feeding but little; injection given, and a little soft dung passed. Linseed oil ... ... 4 oz. Epsom salt ... ... 2 oz. In linseed gruel.
13	3	8 a. m.	...	101·4	Animal in the same state; passed no dung during night; injection given and passed very soft dung mixed with mucus and blood. also 2 or 3 hard balls; the muzzle is very dry, and the animal is shivering a good deal; has not fed. Repeat dose.
	...	6 p. m.	...	102·4	Has not passed dung during the day. Carbonate of ammonia 2 dr., and injections.

CASE No. 80—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 14	4	8 a.m.	...	101·6	Has passed soft dung coated with blood and mucus; off feed; gums congested and excoriated. and slightly aphthous.
" "	...	6 p.m.	...	102·8	Linseed oil ... ... 2 oz. Epsom salt ... ... 1 oz. Ginger ... ... 2 dr. Injection.
" 15	5	8 a.m.	...	101·6	Feeding very little; dung soft; coat staring; slight excoriations on gums and lower lip; animal dull.
" "	...	6 p.m.	...	101·6	Linseed oil ... ... 1 oz. Epsom salt ... ... ½ oz. Ginger ... ... 2 dr.
" 16	6	10 a.m.	...	102·6	Improving. Linseed oil ... ... 2 oz. Epsom salt ... ... 1 oz. Spt. nitr. eth. ... 1 oz.
" "	...	6 p.m.	...	102·8	Dung hard; otherwise doing well. Linseed oil ... ... 2 oz. Common salt ... ... 1½ oz. Spt. nitr. eth. ... 1 oz.
" 17	7	8 a.m.	...	100·6	Off feed; animal dull. Camphor ... 1 dr. Spt. nitr. eth. ... 1 oz. In gruel.
" "	...	6 p.m.	...	103·4	Has passed dung twice during the day in small balls coated with mucus; not feeding. Linseed ... ... 2 oz. Common salt... ... 2 oz. Spt. nitr. eth. ... 1 oz. In thin gruel.
" 18	8	8 a.m.	...	101·6	Passed no dung during night, but passed yellow fæces with injection; not feeding; very dull; viscid discharge from nose. Repeat medicine.
" "	...	6 p.m.	...	102·2	In the same state. Repeat medicine.
" 19	9	8 a.m.	...	100·8	Dung softer, but of clay color; does not feed well. Repeat medicine, and give injection 3 times a day.
" "	...	5-30 p.m.	...	102·4	Feeding a little; dung soft, but still clay-colored. Country spirit ... 1 oz. Linseed oil ... ... 1 oz. Sulphur ... ... 1 oz.
" 20	10	8-30 a.m.	...	100·6	Dung softer, but yellow and offensive. Repeat medicine.
" "	...	6 p.m.	...	102·6	Purging slightly, and dung of a more healthy color; very weak and does not feed. Country spirit ... 1 oz. Camphor ... ... 1 dr.
" 21	11	9 a.m.	...	101·8	Feeding a little; dung very soft and of a more healthy color. Sulphur ... ... 1 oz. Linseed oil ... ... 1 oz. Country spirit ... 1 oz.
" "	...	6 p.m.	...	102·6	Has eaten a little grass and taken some gruel. Repeat dose.
" 22	12	8-30 a.m.	...	101·8	Animal a little better, but passes soft dung with injection.
" "	...	6 p.m.	...	102·2	Country spirit ... 1 oz. Camphor ... ... 1 dr.
" 23	13	8-30 a.m.	...	102·8	Passed a small quantity of dung with injection: feeding a little.
" "	...	6 p.m.	...	103·4	Repeat medicine.
" 24	14	9 a.m.	...	102·2	Looking and feeding better, but no dung passed during night; has now passed some healthy dung with injection.
" "	...	6 p.m.	...	103·2	Continue medicine and give injection.
" 25	15	8 a.m.	...	101·8	Has improved in every respect; feeding well and bowels in good order. Repeat dose.
" "	...	6 p.m.	...	102·2	Discharged cured with 12 tonic powders.

CASE No. 81.

Admitted 14th January 1871.—*Result*, **discharged cured** 20th January 1871.—A **heifer**, brought from village Culna, reported 3 days ill.—*Condition*, **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 14	4	6 p.m.	...	102·8	Purging from this morning; off feed; gums congested; muzzle dry; purging a little watery dung mixed with much mucus and little blood; shivering. Linseed oil ... ... 4 oz. Epsom salt ... ... 2 oz. Turpentine ... ... ½ oz.
„ 15	5	8 a.m.	...	104·6	Tremor; does not eat; dull; ears drooping; slight excoriations of gum, with aphtha; passed no dung; spasmodic twitchings, especially of muscles of neck and hind quarters; no dung passed to-day, although injection has been given. Linseed oil ... ... 2 oz. Epsom salt ... ... 1 oz. Spt. nitr. eth. ... 1 oz.
„ „	...	6 p.m.	...	102·4	
„ 16	6	8 a.m.	...	101·6	Purged during night; injection given this morning, and the animal passed very offensive dung and much mucus. Common salt ... ... ½ oz. In a bottle of linseed gruel 3 times a day.
„ „	...	6 p.m.	...	102·8	
„ 17	7	8-30 a.m.	...	102·6	Purging and feeding a little. No medicine.
„ „	...	6 p.m.	...	102·6	Doing well; dung soft, and feeding better.
„ 18	8	8 a.m.	...	102·	Going on well. Ferri sulph. ... ½ dr. a. m. and p. m.
„ „	...	6 p.m.	...	101·8	
„ 19	9	8 a.m.	...	101·2	Bowels in good order; doing well. Ferri sulph. ... ½ dr. a. m. and p. m.
„ „	...	6 p.m.	...	102·4	
„ 20	10	8 a.m.	...	...	Discharged cured with 1 dozen ½-dr. tonic powders.

CASE No. 82.

Admitted 15th January 1871.—*Result*, **discharged cured** 22nd January 1871.—A **bull**, brought from village Hejoolee, reported 2 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 15	3	8 a.m.	...	104·6	Feeding but little; muzzle dry; purging has not yet commenced; ears drooping, and the animal dull; mouth hot; shivering; gums slightly congested; dung hard. Linseed oil ... ... 6 oz. Epsom salt ... ... 4 oz. Turpentine ... ... ½ oz.
„ „	...	6 p.m.	...	105·2	Spasmodic twitchings, especially about the sternum and shoulder. Give injections.
„ 16	4	10 a.m.	...	104·2	Animal lying down; has passed a little dung, which is hard and covered with mucus; eats nothing; spasmodic twitchings continue; injection given, and very hard dung passed, the dung being coated with thick mucus and streaks of blood. Linseed oil ... ... 4 oz. Epsom salt ... ... 3 oz. Spt. nitr. eth. ... 1 oz.
„ „	...	6 p.m.	...	103·4	Spasmodic twitchings of head, shoulder and neck especially very marked; eyelids half-closed. Linseed oil ... ... 2 oz. Common salt ... 2 oz. Spt. nitr. eth. ... 1 oz.
„ 17	5	8-30 a.m.	..	101·6	Muzzle very dry; very viscid discharge from nose; not feeding; gums very much congested; purging dark-yellow dung coated with thick slime. No medicine.
„ „	...	6 p.m.	...	102·2	

CASE No. 82—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 18	6	8 a. m.	...	100·8	Purged during night; feeding a little; gums excoriated around teeth.
„ „	...	6 p. m.	...	102·2	Linseed oil ... ... 1 oz.
					Common salt ... 1 oz.
„ 19	7	8 a. m.	...	101·4	Still purging a little, but feeding better.
					Country spirit ... 2 oz.
„ „	...	6 p. m.	...	102·6	Better.
					Camphor ... ... 1 dr.
„ 20	8	8 a. m.	...	99·8	Dung soft; gums more healthy; feeding better; going on well.
„ „	...	6-30 p. m.	...	102·8	Ferri sulph. ... ... 1 dr. a. m. and p. m.
					Sulphuric acid .. 1 dr. midday.
					Dung soft; gums more healthy; feeding better; going on well.
„ 21	9	9 a. m.	...	100·8	Going on well.
					Repeat dose.
„ „	...	6 p. m.	...	102·2	
„ 22	10	8 a. m.	...	...	Discharged cured with 12 1-dr. tonic powders.

CASE No. 83.

Admitted 15th January 1871.—*Result,* **died** 16th January 1871.—A **bullock,** brought from village Hejoolee, reported 4 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 15	5	6 a. m.	...	101·6	Off feed; ears drooping; coat staring; gums and lower lips excoriated and covered with aphtha; purging watery stools; thick discharge from nose; breath very offensive; very weak and dull; lying down.
					Catechu ... ... 2 dr.
					Tinct. opii ... ... 1 oz.
					Chalk ... ... 2 oz.
					Spt. eth. nitr. ... 1 oz.
„ „	...	2 p. m.	...	...	Not better.
					Catechu ... ... 1 dr.
					Tinct. opii ... ... ½ oz.
					Chalk ... ... 1 oz.
					Spt. eth. nitric ... 1 or.
					In linseed gruel.
„ „	...	6 p. m.	...	101·8	Repeat medicine.
„ 16	6	5 a. m.	..	...	Died.

CASE No. 84.

Admitted 15th January 1871.—*Result,* **discharged cured** 19th January 1871.—A **bullock,** brought from village Hejoolee, reported 2 days ill.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 15	3	8 a. m.	...	100·4	Off feed; ears drooping; coat staring; aphthous excoriation on lower lip; gums congested; muzzle dry; dung soft.
					Sulphuric acid ... 1 dr.
„ „	...	6 p. m.	...	100·6	In the same state.
					Linseed oil ... ... 3 oz.
					Epsom salt ... ... 2 oz.
					Spt. nitr. eth. ... 1 oz. in linseed gruel
„ 16	4	10 a. m.	...	100·2	Animal better and feeding a little; dung soft and black.
		6 p. m.	...	101·6	Linseed oil ... ... 2 oz.
					Epsom salt ... ... 1 oz.
					Spt. nitr. eth. ... 1 oz. in gruel.
„ 17	5	8-30 a. m.	...	99·2	Doing well.
„ „		6 p. m.	...	101·8	Sulphate of iron ... 1 dr. a. m. and p. m.

CASE No. 84—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 18	6	8 a. m.	...	101·8	Feeding and going on well. Continue medicine.
,, ,,	...	6 p. m.	...	102·4	Going on well.
,, 19	7	8 a. m.	...	...	Feeding and improving in every respect. Continue medicine. Discharged cured at the request of the owner with 12 tonic powders.

CASE No. 85.

Admitted 15th January 1871.—*Result,* **discharged cured** 22nd January 1871.—A **bull-calf,** brought from village Hejoolee, reported 1 day ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 15	2	8 a. m.	...	99·8	Dull, with dry muzzle; dung soft and coated with blood and mucus; gums, lower lips, and hard palate excoriated, and aphthous; feeding but little.
,, ,,	...	6 p. m.	...	101·8	Linseed oil ... ... 3 oz. Epsom salt ... ... 1½ oz.
16	3	8 a. m.	...	101·4	Slightly better; dung hard. Linseed oil ... ... 1 oz. Epsom salt ... ... 1 oz.
,,	...	6 p. m.	...	101·	Slightly better; dung hard. Repeat dose; there being no epsom salt, give common salt.
,, 17	4	8 a. m.	...	101·8	Muzzle still dry; discharge from eyes; dung soft and passed with injection; just passed soft dung again; feeding but little. Linseed gruel with ½ oz. common salt.
,, ,,	...	6 p. m.	...	101·8	Dung passed with injection. Linseed oil .. ... 2 oz. Common salt... ... 1 oz.
,, 18		8 a. m.	...	101·4	Purged during night; better. No medicine.
,,	...	6 p. m.	...	102·4	
19		8 a. m.	...	103·2	Dung soft; feeding better; doing well. Linseed gruel with ½ oz. common salt three times a day.
,, ,,	...	6 p. m.	...	102·4	
,, 20	7	8 a. m.	...	100·6	Feeding and going on well; muzzle dry; coat staring. Common salt ... ½ oz. Country spirit ... 1 oz. Twice a day.
,, 21	8	9 a. m.	...	102·6	Doing well. Continue medicine morning and evening in linseed gruel.
,, ,,	...	6 p. m.	...	101·8	
,, 22	9	8-30 a. m.	...	...	Recovered.

CASE No. 86.

Admitted 15th January 1871.—*Result,* **discharged cured** 24th January 1871.—A **bull,** brought from village Culna reported 1 day ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 15	2	8 a. m.	...	102·8	Muzzle dry; gums congested; purging, watery stool, but without any mucus or blood; animal dull, and eats but little.
,, ,,	...	6 p. m.	...	102·6	Catechu ... ... 1 dr. Chalk ... ... 1 oz. Tinct. opii ... ... ½ oz. Spt. nitr. eth. ... 1 oz.

CASE No. 86—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 16	3	10 a. m.	...	102·6	Gums excoriated, with a deposit of aphtha; spasmodic twitchings of neck; feeding but little; bowels inclined to be costive (the animal is very wild, hardly domesticated). Linseed oil ... ... 4 oz. Epsom salt ... ... 3 oz. Turpentine ... ... ½ oz. In thin rice gruel.
„ „	...	6 p. m.	...	102·2	Dung hard. Hyposulphate of soda ... 1 oz. Linseed oil ... ... 3 oz. Spt. nitr. eth. ... 1 oz.
„ 17	4	8-30 a. m.	...	101·6	Dung very hard. Sulphate of soda 1 oz. in thin rice gruel; injection every hour.
„ „	...	6 p. m.	...	102·2	Dung still hard. Linseed oil ... ... 2 oz. Hyposulphate of soda ... 1 oz. Turpentine ... ... ½ oz. In thin gruel.
„ 18	5	8-15 a. m.	...	101·6	Dung soft and animal better; feeding a little. Repeat last evening's dose.
„ „	...	6 p. m.	...	102·2	Better.
„ 19	6	8 a. m.	...	101·4	} Dung soft and animal feeding. Repeat medicine.
„ „	...	5-30 p. m.	...	102·2	
„ 20	7	8 a. m.	...	101·2	} Dung very soft; feeding. Linseed gruel with common salt.
„ „	...	6 p. m.	...	103·4	
„ 21	8	9 a. m.	...	101·8	Muzzle dry; gums very much congested; dung soft; discharge from nose; feeding better. Linseed gruel with common salt.
„ „	...	6 p. m.	...	102·2	Muzzle dry; gums very much congested; dung soft; discharge from nose; feeding better. Country spirit ... 1 oz. Camphor ... ... 1 dr.
„ 22	9	8-30 a. m.	...	101·2	Excoriations on gums; dung soft. No medicine.
„ „	...	6 p. m.	...	102·2	Better.
„ 23	10	8 a. m.	...	101·8	Dung soft and of a healthy color; doing well. Common salt with gruel.
„ „	...	6 p. m.	...	102·6	Going on well.
„ 24	11	8 a. m.	...	...	Doing well; discharged cured with 12 1-dr. tonic powders.

CASE No. 87.

Admitted 16th January 1871.—*Result,* **discharged cured** 23rd January 1871.—**A cow,** brought from village Culna, reported 1 day ill.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 16	2	8 a. m.	...	104·6	Said to have left off eating since yesterday; the muzzle is dry, and there are spasmodic twitchings of the muscles of ears and neck; injections given, and balls of hard dung covered with mucus are passed; the gums are very much congested; the coat is staring, back roached, and the animal is very dull. Linseed oil ... ... 4 oz. Epsom salt ... ... 3 oz. Turpentine ... ... ½ oz.
„ „	...	6 p. m.	...	103·8	Tremor and spasmodic twitchings of neck, head, and shoulders; coat staring; the animal is evidently in much pain. Linseed oil ... ... 4 oz. Common salt... ... 2 oz. Spt. nitr. eth. ... 1 oz. Continue injections.

CASE No. 87—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 17	3	8-30 a. m.	...	103·8	Dung hard and coated with slime and tinged with blood; dung passed with injection only; animal very dull, and stands with back roached; the head shakes from spasmodic twitchings; parotid glands and neighbourhood swollen; the position of the head and neck is such as to give an idea that the animal is endeavouring to contract her neck; the skin about neck and shoulders is corrugated. Linseed oil ... ... 3 oz. Common salt... ... 3 oz. Turpentine ... ... ½ oz. To be given every second hour.
„ „	...	6 p. m.	...	103·6	Passed dung with injection, the same being soft and mixed with mucus. Spt. nitr. eth. ... 1 oz. Camphor ... ... 2 dr.
„ 18	4	8 a. m.	...	103·4	Dung hard, in small balls, but the animal is better; hardly any spasmodic twitching, but dull. Linseed oil ... ... 4 oz. Common salt ... 2 oz. Country spirit ... 1 oz. Twice a day.
„ „	...	6 p. m.	...	103·	Dung still in hard pellets, but doing well in other respects. Linseed oil ... ... 6 oz. Sulphate of soda ... 1 oz. Country spirit ... 2 oz. Continue injections.
„ 19	5	8 a. m.	...	103·2	Dung still pellet-like.
„ „	...	6 p. m.	...	103·8	Dung a little softer. Give injection every hour. Linseed oil ... ... 3 oz. Sulphur ... ... 1 oz. Country spirit ... 2 oz.
„ 20	6	8 a. m.	...	103·4	Dung soft and no longer in balls. Feeding better. Linseed oil ... ... 1 oz. Sulphur ... ... 1 oz. Country spirit ... 1 oz. Continue injection.
„ „	...	6 p. m.	...	103·8	Better.
„ 21	7	9 a. m.	...	103·2	Going on well.
„ „	...	6 p. m.	...	103·4	Repeat medicine and give injections every second hour.
„ 22	8	8-30 a. m.	...	102·8	Better; eruptions around anus. Common salt 1 oz. in a gruel of linseed. Gruel 3 times a day.
„ „	...	6 p. m.	...	103·	Doing well.
„ 23	9	8 a. m.	...	...	Recovered; discharged with 12 tonic powders.

CASE No. 88.

Admitted 20th January 1871.—*Result,* **died** 23rd January 1871.—A **cow,** brought from village Bagachra, reported 3 days ill.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 20	4	6 p. m.	...	...	Said to be purging since this morning and off feed two days; has a calf at foot; viscid discharge from nose; nasal membrane very much congested; excoriations of gums and under-lips, especially at corners of mouth; buccal membrane also slightly excoriated; breath offensive; ears drooping; eyelids semi-closed; coat staring; vagina congested; patches of ecchymosis on mucous membrane. Common salt 2 oz. in rice gruel.

CASE No. 88—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 21	5	9 a. m.	...	104·6	Purging, with mucus, but no blood; in other respects in the same state. Linseed oil ... ... 2 oz. Sulphur ... ... 1 oz. Common spirit ... 1 oz.
„ „	...	6 p m.	...	104·4	Worse; purging blood and mucus; tremor and spasmodic twitchings of shoulders; very uneasy; walking about; eyes semi-closed; peculiar twinkling of eyelids; spasmodic action of the muscles of eyes. Spt. eth. nitr. ... 1½ oz. Ex. hyoscyamus ... 1½ dr.
„ 22	6	8-30 a. m.	...	103·8	Profuse viscid discharge from nose; purging, the dung being green and mixed with mucus; there is no blood; feeding a little; animal much quieter and somewhat better than last night. Spt. eth. nitr. ... 1 oz. Ex. Hyoscyamus ... 1 dr.
„ „	...	6 p. m.	...	102·8	Animal worse; lying down. Ex. hyoscyamus ... 2 dr. Spt. eth. nitr. ... 2 oz.
„ 23	7	3 a. m.	...	...	Died.

CASE No. 89.

Admitted 20th January 1871.—*Result*, **discharged cured** 26th January 1871.—A **bullock,** brought from village Bagachra, reported 1 day ill.—*Condition*, **good.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 20	2	1 p. m.	...	...	Feeding a little; bowels slightly constipated; mucous membrane of mouth generally congested; spasmodic twitchings of shoulders and neck coat staring; muzzle dry. Common salt 2 oz. in 1 bottle of linseed gruel.
„ 21	3	9 a. m.	...	100·4	Animal in the same state. Linseed oil ... ... 3 oz. Sulphur ... ... 1 oz. Country spirit ... 1 oz. In thin gruel.
„ „	...	6 p. m.	...	101·2	Dung soft; animal a little worse; very dry muzzle; roached back; coat staring; all four legs brought together; spasmodic twitchings about flanks and hind quarters, as well as fore quarters; has eaten a little. No medicine.
„ 22	4	8-30 a. m.	...	99·8	Animal a little better.
„ „	...	6 p. m.	...	101·6	Repeat dose.
„ 23	5	8-30 a. m.	...	100·4	Animal a little better, but muzzle still dry and dung hard, and coated with mucus. Linseed oil ... ... 4 oz. Sulphur ... ... 2 oz. Country spirit ... 1 oz. Linseed gruel with a little common salt several times a day.
„ „	...	6 p. m.	...	100·8	
„ 24	6	9 a. m.	...	100·8	Feeding a little, but dung still rather hard. Linseed oil ... ... 3 oz. Sulphur ... ... 1 oz. Country spirit ... 1 oz.
„ „	...	6 p. m.	...	101·8	
„ 25	7	8 a. m.	...	100·4	Dung soft; feeding and doing well in every way. Commom salt 1 oz. in rice and linseed gruel four times a day.
„ „	...	6 p. m.	...	104·2	
„ 26	8	8-30 a. m.	...	...	Discharged cured with 1 dozen 1-dr. tonic powders.

CASE No. 90.

Admitted 20th January 1871.—*Result*, **discharged cured** 26th January 1871.—A **cow,** brought from village Bagachra, reported 4 days ill.—*Condition*, **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 20	5	6 p. m.	...	...	Said to be purging 3 days; aphthous condition of under-lip and gums, as also buccal membrane; discharge from eyes and nose; muzzle dry; purging much mucus; coat staring; mouth cold; eats a little green grass; very weak, and lying down. Common salt 2 oz. in linseed gruel.
„ 21	6	8 a. m.	...	99·2	Not eating this morning, weak and purging. Tinct. opii ... ... 1 oz. Chalk ... ... 2 oz. Spt. nitr. eth. ... 2 oz. Catechu ... ... 1 dr.
„ „	...	6 p. m.	...	103·4	Feeding a little; purging less. Repeat dose.
„ 22	7	8 a. m.	...	100·8	Feeding a little; purging less. Country spirit ... 1 oz. Camphor ... ... 1 dr. In linseed gruel.
„ „	...	6 p. m.	...	103·4	Little better.
„ 23	8	8 a. m.	...	101·6	Dung soft and healthy-looking, but more or less mucus; the animal is dull, but feeds a little. Country spirit ... 1 oz. Camphor ... ... 1 dr. In linseed gruel.
„ „	...	6 p. m.	...	103·6	
„ 24	9	8 a. m.	...	101·8	Better; feeding a little; bowels in good order.
„ „	...	6 p. m.	...	101·8	Repeat medicine.
„ 25	10	8 a. m.	..	100·4	Doing well.
„ „	...	6 p. m.	...	102·2	Repeat medicine and give common salt 1 oz. 3 times a day in thick linseed gruel.
„ 26	11	8 a. m.	...	...	Feeding and doing well; discharged cured at the request of the owner; 1 doz. tonic powders given.

CASE No. 91.

Admitted 20th January 1871.—*Result*, **discharged cured** 28th January 1871.—A **bullock,** brought from village Bagachra, reported 6 days ill.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 20	7	8 a. m.	...	...	Excoriations, with aphthous deposit of gums, palate, and buccal membrane; discharge from eyes and nose; purging offensive and very watery stools; muzzle dry; coat staring; very weak. Catechu ... ... 2 dr. Tinct. opii ... ... 1 oz. Chalk ... ... 2 oz. Spt. nitr. eth. ... 2 oz. In thin rice gruel.
„ 21	8	9 a. m.	...	102·	Slightly better; purging not so liquid; picking a little grass. Repeat dose.
„ „	...	6 p. m.	...	102·4	Still purging. Repeat this morning's dose.
„ 22	9	8-30 a. m.	...	101·8	Feeding a little, but still purging. Repeat medicine with 2 oz. of linseed oil.
„ „	...	6 p. m.	...	102·4	Repeat dose without oil, and with linseed gruel.
„ 23	10	8-30 a. m.	...	100·2	Feeding; purging less, but a good deal of mucus coming with dung; muzzle still dry; discharges from eyes and nose very viscid. Linseed gruel with ½ oz. of common salt 2 or 3 times a day.
„ „	...	6 p. m.	...	102·4	
„ „	11	9 a. m.	...	101·	Feeding well; dung in a good state; discharge still from eyes and nose; muzzle rather dry. Sulphate of iron 1 dr. morning and evening, and at midday give country spirit 1 oz. and camphor 1 dr.
„ „	...	6 p. m.	...	103·6	

CASE No. 91—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 25	12	8 a. m.	...	101·4	Not feeding well; dull; muzzle very dry; has purged twice during night, but no mucus or blood; dung very offensive.
„ „	...	6 p. m.	...	102·6	Linseed oil ... ... 4 oz. Sulphur ... ... 1 oz. Country spirit ... 1½ oz. And linseed gruel several times a day.
„ 26	13	8-30 a. m.	...	101·8	Purged 4 times since yesterday. Country spirit ... 1 oz. Camphor ... ... 1 dr. In linseed gruel.
„ „	...	11 a. m.	...	...	Purging still. Catechu ... ... 1 dr. Tinct. opii ... ... 1½ oz. Chalk ... ... 1 oz. Spt. nitr. eth. ... 1 oz.
„ „	...	5 p. m.	...	103·4	Purging continues. Catechu ... ... 2 dr. Tinct. opii ... ... 1 oz. Chalk ... ... 2 oz. Spt. nitr. eth. ... 2 oz.
„ 27	14	8-30 a. m.	...	101·8	Dung soft and healthy-looking; viscid discharge from eyes and nose, and œdema around eyes and under jaws; feeding better.
„ „	...	6 p. m.	...	103·2	Country spirit ... 1 oz. Camphor ... ... 1 dr.
„ 28	15	...	...	...	Discharged cured.

CASE No. 92.

Admitted 23rd January 1871.—*Result*, **discharged cured** 26th January 1871.—A **bullock**, brought from village Shordenga, reported 3 days ill.—*Condition*, **poor**.

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 23	4	6 p. m.	...	...	Purging since this morning; off feed; discharge from eyes, nose, and mouth. To be supported by nourishing drenches; no medicine for the night.
„ 24	5	9 a. m.	...	101·6	Purging several times; excoriations and aphthous deposit on gums, buccal membrane, and under the point of the tongue; mouth very sore. Catechu ... 2 dr. Tinct. opii ... 1 oz. Chalk ... ... 2 oz. Spt. nitr. eth. ... 2 oz. In rice gruel.
„ 25	6	8-15 a. m.	...	100·8	Has purged only once during the night; is feeding a little; no mucus or blood with fæces.
„ „	...	6 p. m.	...	101·8	Common spirit ... 1 oz. Camphor ... 1 dr. morning and evening.
„ 26	7	8-30 a. m.	...	...	Bowels in good order; feeding and doing well; at the request of the owner discharged.

INDEX OF EXPERIMENTAL CASES.

No. of Cases.	Animal and sex.	Date of admission.	Date of discharge.	Result.	Remarks.
I.—CASES TREATED AT ASSAM.					
1	Buffalo ...	25th Jan. 1870	7th Feb. 1870	Died ...	This animal, in robust health, was purchased by the Commission. Was allowed to associate with rinderpest cattle. Became affected on the 10th day, and died on the 14th day.
2	Bullock ...	26th „ ...	8th „ ...	Do. ...	This animal was purchased by the Commission for the purpose of experiment, and was quite healthy. A pouch was made behind the right elbow and filled with rinderpest blood. On the 3rd day it showed signs of illness and died of rinderpest on the 15th day.
3	Do. ...	27th „ ...	9th „ ...	Bled to death	This animal, though poor in condition, was healthy. A pouch was made behind right elbow and filled with milk of a rinderpest cow. It showed symptoms of disease from the 2nd day. On the 14th day it was in a dying state, and on the 15th day it was bled to death.
4	Do. ...	„ „ ...	4th „ ...	Died ...	This animal, in good health, was inoculated with excrement of another that had died of rinderpest. It showed symptoms of disease on the 2nd day, and died on the 7th day.
5	Cow ...	„ „ ...	„ „ ...	Do. ...	This animal was inoculated with rinderpest aphtha. It commenced to sicken on the 2nd day, and died on the 9th day.
II.—CASES TREATED AT CHOOADANGAH.					
6	Bullock ...	9th March 1870	21st March 1870	Unaffected ...	This animal was bought for the purpose of experiment, and said to have had *bussunto*. A pouch was made behind the right ear, and filled with some tow soaked in dried rinderpest fæces, obtained from Assam and softened in tepid water. No disease supervened, and the bullock was discharged on the 13th day after admission to the hospital.
7	She-goat ...	9th „ ...	21st ...	Do. ...	This animal was bought for experimental purposes and was inoculated with dried rinderpest excrement as in the previous case. It was discharged unaffected on the 13th day.
8	Ram ...	„ „ ...	„ „ ...	Do. ...	This animal was experimented upon in the same way as Nos. 6 and 7, with similar results.
9	Bullock ...	10th „ ...	„ „ ...	Do. ...	This animal was inoculated with nasal discharge of a cow suffering from rinderpest; was discharged unaffected on the 12th day of its inoculation.
10	He-goat ...	„ „ ...	„ „ ...	Do. ...	This animal was inoculated with the excrement of a bullock affected with rinderpest. It showed no signs of disease up to the 12th day, when it was discharged.

No. of Cases.	Animal and sex.	Date of admission.	Date of discharge.	Result.	Remarks.
		III.—CASES TREATED AT CULNA.			
11	Bullock ...	21st Dec. 1870	22nd Jan. 1870	Unaffected ...	These 5 animals, now healthy and sound, had a severe attack of *gootee* or rinderpest during the epizootic that prevailed in Culna 10 years ago, and survived. They were allowed to associate with a large number of cattle suffering from rinderpest and mostly fed on food left by the patients. They showed no signs of disease and began to improve in condition. On the 24th January, Nos. 13, 14 and 15, and on the 7th February, Nos. 11 and 12, were inoculated with rinderpest matter; but they did not become affected, and were discharged much improved in health on the 33rd day of their admission into the hospital.
12	Cow ...				
13	Do. ...				
14	Do. ...				
15	Do. ...				
16	Do. ...	„ „ ...	28th , ...	Cured ...	This animal was purchased in Calcutta for experimental purposes, and was sent to the Culna Hospital in good health on the 21st December. On the 26th instant she showed signs of rinderpest, but in a mild form. No medicine was given, except on the 3rd February, when a laxative dose (epsom salt, sulphur and ginger) was given. This cow recovered.
17	Do. ...	„ „ ..	27th Dec. 1870	Died	This cow was also purchased in Calcutta for experimental purposes, was sent to the Culna Hospital, and housed with cattle affected with rinderpest, and allowed to take the food left by them. It became ill on the 26th December, and died of rinderpest on the following evening.
18	Ewe ...	24th „ ...	28th Jan. 1871	Unaffected ...	This animal was at first allowed to associate with cattle suffering from rinderpest, and subsequently inoculated with rinderpest aphtha. It, however, showed no symptoms of disease, and was discharged after a month's stay in the hospital.
19	Do. ...	„ , ...	25th „ ...	Do. ...	This animal was inoculated with the fæces of a bullock affected with the rinderpest, but did not become affected.
20	She-goat ...	„ „ ...	„ „ ...	Do. ...	This animal was allowed to associate with cattle suffering from rinderpest, but did not become affected.
21	Ram ...	„ „ ...	28th „ ..	Killed ...	Was inoculated with aphtha of a cow suffering from rinderpest, and kept amongst a number of diseased animals. Showed slight signs of disease; was killed for post-mortem examination, but no traces of rinderpest were found.
22	Do. ...	„ „ ...	25th „ ...	Cured ...	Was also inoculated with the nasal discharge of a rinderpest case. On the 30th December showed signs of rinderpest. The attack, however, was mild, and on the 9th January had recovered.
23	Ewe ...	„ ...	9th „ ..	Died ...	This animal was allowed to associate with rinderpest cattle up to the 30th instant, when it was inoculated with rinderpest aphtha. On the 5th January became ill, and died of rinderpest on the 9th idem.
24	Do. ...	„ „ ...	28th „ ...	Cured ...	This animal, young and healthy, was allowed to go about the hospital yard and mix freely with cattle suffering from rinderpest. The fæcal discharges of the diseased cattle were daily rubbed over her abdomen and into the groins, but she remained unaffected.
25	She-goat ...	„ „ ...	„ „ ...	Killed ...	Inoculated with the nasal discharge of a rinderpest patient. On the 30th December she became ill, and the symptoms of rinderpest were shown. This animal recovered.
26	Do ...	„ „ ...	1st „ ...	Died ...	Was inoculated with the nasal discharge of a cow suffering from rinderpest. In six days the signs of disease were observable, and two days after the animal died of rinderpest.
27	Do. ...	19th , ...	9th „ ...	Do. ...	This animal was purchased in Calcutta, and was removed to the experimental hospital at Culna, where it associated freely with cattle suffering from rinderpest. Became affected and died of rinderpest.
28	Do ..	„ „ ...	25th „ ..	Unaffected ...	Treated similarly as No. 27, and became affected with rinderpest.
29	Do.	24th „ ..	23rd „ ...	Do. ...	Treated like Nos. 27 and 28, but did not contract rinderpest.
30	Sow ...	25th „ ...	22nd „ ..	Do. ...	This animal was inoculated with the fæces of an animal suffering from rinderpest, but remained unaffected.
31	Boar ..	„ „ ...	7th „ ...	Do. ...	Ditto ditto ditto.

No. of Cases.	Animal and sex.	Date of admission.	Date of discharge.	Result.	Remarks.
		III.—CASES TREATED AT CULNA—*continued.*			
32	Sow ...	25th Dec. 1870	7th Jan. 1871	Unknown ...	Was inoculated with aphtha of the 4th stomach of a bullock that had died of rinderpest on the 25th December. On the 7th January the owner, who had the custody of the animal, reported that it had been destroyed by jackals on the previous day.
33	Four cocks & one hen.	„ „ ...	17th „ ...	Unaffected ...	These fowls were inoculated with the aphtha of the 4th stomach of a bullock that had died of rinderpest, but were not affected.
34	Dog ...	„ „ ...	29th Dec. 1870	Do. ...	Was inoculated with the aphtha of the 4th stomach of a bullock that had died of rinderpest. It showed no signs of rinderpest
35	Two ducks...	31st „ ...	17th Jan. 1871	Do. ...	Were inoculated with rinderpest aphtha, but were not affected.
36	Cow ...	1st Jan. 1871	28th „ ...	Do. ...	Stood in a shed 24 feet distant from the experimental hospital from the time of the opening of the hospital (12th December) to the 28th January, when the hospital was closed, and though reported by the owner, in whose house it was born, to have never been affected with rinderpest, the animal did not contract the disease.
37	Dog ...	2nd „ ...	22nd „ ...	Do. ...	Was inoculated with the discharge from the eyes of a bullock suffering from rinderpest, but remained unaffected.
38	Three cats ...	„ „ ...	„ „ ...	Do. ...	Two of these cats were inoculated with the discharge from the eyes of a bullock suffering from rinderpest, and the 3rd with the aphtha removed from the mouth of another case. No effect.
39	Mare ...	4th „ ...	24th „ ...	Do. ...	Was inoculated at the root of the off ear with the fæcal discharge from animal suffering from rinderpest, and was allowed to eat the food left by the rinderpest cattle. Remained in good health, and improved much in condition.
40	Cow ...	5th „ ...	27th „ ...	Unaffected ...	This animal, said never to have had rinderpest, was placed in the compound adjoining the hospital where the litter of the hospital was deposited. It was kept tied up within a matted shed and provided with food brought direct from the market, and with a special attendant, who was not allowed to go near any other cattle. The shed was 20 yards from the place where the hospital litter was deposited, and 40 yards from the hospital itself. She never showed any signs of disease and left the place unaffected.
41	Do. ...	„ „ ...	25th „ ...	Do. ...	Reported never to have had rinderpest; was placed in the hospital compound, but in a stall raised 6 feet high from the ground. The stall was kept well covered with McDougall's powder and fumigated with sulphur four times a day. She showed no signs of disease.
42	Bull ...	„ „ ...	„ „ ...	Do. ...	Was experimented upon precisely in the same manner as case No. 40. Latterly two sheep (numbers 21 and 23) were kept in the same stall. He, however, showed no signs of rinderpest.
43	Cow ...	7th „ ...	16th „ ...	Died ...	Was inoculated with the nasal discharge of a rinderpest case, contracted the disease, and died on the 16th January 1871.
44	Heifer ...	„ „ ...	27th „ ...	Cured ...	Was inoculated with aphthous matter obtained from case No. 23, was kept outside the hospital in a separate shed with case No. 43, had separate food, and an attendant who never entered the hospital-yard. On the 13th January symptoms of rinderpest were observable, and on the 15th she was removed to the hospital, was treated, and recovered.
45	Do. ...	10th „ ...	„ „ ...	Do. ...	Was kept in a cow-shed 30 yards distant from the hospital, became slightly affected, and recovered.
46	Dog ...	18th „ ...	28th „ ...	Unaffected ...	Was inoculated with the aphtha from the cœcum of a cow that died of rinderpest, and remained unaffected up to the 28th January, when the hospital was closed.
47	Do. ...	„ „ ...	„ „ ...	Do. ...	Similarly treated, with similar result.
48	Do. ...	19th „ ...	„ „	Do. ...	Treated in a similar way, with a similar result.

EXPERIMENTAL CASES.

CASE No. 1.

Admitted 25th January 1870.—*Result*, **died.**—A **buffalo,** brought from village Madarkhat.—*Condition*, **excellent.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 25	...	3 p.m.	...	...	This animal, apparently in robust health, has been purchased by the Commission and placed in a stall, 30 feet by 12 feet, between two animals recovering from rinderpest.
„ 26	...	8 a.m.	...	...	Appears quite well; feeding; bowels slightly relaxed from green food; allowed to graze in the hospital enclosure.
„ 27	...	8 a.m.	...	...	No sign of disease; to be placed in a stall where animals have died of rinderpest.
„ „	...	5 p.m.	...	102·4	Eating; mouth healthy; muzzle moist; fed heartily all day.
„ 28	...	9 a.m.	...	98·4	
„ 29	...	9 a.m.	...	98·6	Dung in good order; quite healthy.
„ 30	...	1-30 p.m.	...	102	Nose a little dry.
„ 31	...	9 a.m.	...	97·2	Quite healthy.
February 1	...	9 a.m.	...	97	Appears all right; feeding well.
„ 2	...	9 a.m.	...	98·2	Nose dry; slight discharge from nose and mouth; dung in good order: ninth day.
„ 3	1	9-30 a.m.	...	99·4	A little discharge from nose and mouth; mucous membrane of mouth a little congested; conjunctiva congested.
„ 4	2	9 a.m.	...	102·4	Coat staring; back roached; dung in good order; tongue furred; nasal discharge viscid; buccal membrane congested.
„ 5	3	9-30 a.m.	...	102·4	Muzzle dry; discharges and congestions as noted yesterday; mucous membrane of rectum congested; dung soft; passes mucus and blood; continues to feed pretty well.
„ 6	4	8-45 a.m.	...	100	Purging bloody stools; looks very ill; other symptoms as before.
„ 7	5	9-45 a.m.	...	98	Skin of abdomen red and patchy; no eruption; purging watery stools with mucus and blood; discharges from eyes, nose, and mouth.
„ „	„	5 p.m.	...	...	Lying down on left side; turning nose to right flank; seems to be in great pain; eyes sunk; breathing hard; evidently sinking fast. Died during the night. (*Vide* post-mortem No. 21).

CASE No. 2.

Admitted 26th January 1870.—*Result*, **died** on 8th February 1870.—A **bullock,** brought from a village near Madarkhat.—*Condition*, **poor.**

Day of Month	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 26	...	8 a.m.	...	...	This animal has been purchased by the Commission for the purpose of experiment, and is apparently quite healthy.
„ 27	...	8 a.m.	66	99	A pouch has been made behind the right elbow and filled with blood obtained from a diseased animal which had died on the 25th idem (No. 3 postmortem).
„ „	1	5 p.m.	82	104·2	Muzzle dry; roots of ears hot; extremities cold; eats a little.
„ 28	2	8-15 a.m.	80, weak and irregular.	99·8	Shivering; tongue furred; body hot, especially on the right side.
„ „	„	5-45 p.m.	80	103·6	Mouth hot; dung in good order; feeding well; swelling behind elbow painful.

CASE No. 2—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 29	3	8-15 a. m.	68	100·3	Dung soft; muzzle a little dry.
„ „	...	5 p. m.	66	103·8	Tongue a little furred.
„ 30	4	1-30 p. m.	64, weak.	103·2	Roots of buccal papillæ congested.
„ 31	5	8-30 a. m.	60, irregular.	97	Nose dry; mouth in good order; dung hard; continues to feed; swelling of wound reduced.
„ „	...	6 p. m.	60	104	Not feeding very well; nose dry.
February 1	6	9 a. m.	72	98	Buccal membrane and palate congested; dung a little soft.
„ „	...	4-30 p. m.	80	104	Buccal membrane and palate more congested; feeding a little.
„ 2	7	8 a. m.	56	99·2	Nose dry.
„ „	...	4-45 p. m.	80	106	Tongue furred; dung soft and slimy, and in it undigested grain.
February 3	8	9-15 a. m.	44, very weak.	101	Nose dry; no discharge; mouth congested; a little discharge from the inoculated part.
„ „	...	5-30 p. m.	64	104·5	Slight discharge from nose; no diarrhœa, but dung contains a little bloody mucus; eats a little.
„ 4	9	9 a. m.	68, weak	102	Slight discharge from nose and mouth; nose dry; buccal membrane congested; slimy purging; discharge from wound.
„ „	...	5 p. m.	84, very weak.	102·6	Feeding a little; purging mucus and blood.
„ 5	10	9-30 a. m.	76, weak	102·2	Dung slimy; mucous membrane of rectum congested; slight discharge from nose.
„ „	...	5 p. m.	54, weak	103·6	Slight discharge from eyes and nose; buccal membrane congested.
„ 6	11	8-45 a. m.	76, weak	102·4	Viscid discharge from eyes and nostrils; feeding a little.
„ „	...	5 p. m.	72	103	Spasmodic action in hind quarters; trembling all over; dung softer; not feeding.
„ 7	12	9-45 a. m.	84, very weak.	101·6	Worse; discharge from eyes, nose, and mouth; purging mucus; no blood apparent.
„ „	...	5 p. m.	80, very weak.	104·4	Aphthous ulcers on upper and lower gums and along the hard palate; discharge from the eyes; purging; dung contains mucus and aphtha.
„ 8	13	9 a. m.	68, very weak.	97·2	Ulcers in mouth; same as yesterday; dysentery.
„ „	...	4 p. m.	...	...	Died. (*Vide* post-mortem No. 22.)

CASE No. 3.

Admitted 27th January 1870.—*Result,* **bled to death.**—An aged **bullock,** brought from a village near Madarkhat.—*Condition,* **very poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 27	...	9 a. m.	48, weak	98·3	An aged bullock in very poor condition, but otherwise quite healthy and feeding well; pouch made behind right elbow and filled with milk from No. 3 post-mortem; slight discharge from mouth and nostrils; mucous membrane of mouth pallid; dung healthy.
„ „	...	5 p. m.	80, weak	104·5	Off feed; great heat and tenderness surrounding the inoculated part; muzzle dry.
„ 28	1	8-30 a. m.	48, very weak.	97·6	Muzzle moist; discharge from mouth; tongue furred; dung in good order.
„ „	...	5-45 p. m.	74	105·2	Mouth very hot; tongue furred; feeding well.
„ 29	2	8-15 a. m.	66	98	Discharge from mouth and nostrils; a little twitching of hind quarters; coat staring; no rumination.
„ „	...	5 p. m.	68, weak	106	Buccal membrane hot; is off feed.
„ 30	3	1-30 p. m.	64	104	Feeding; mucous membranes of mouth not congested.
„ 31	4	8-30 a. m.	72	100·2	Feeding; bowels in good order; wound doing well; nose dry.
„ „	...	6 p. m.	92	105	Nose dry; mouth looks well.
February 1	5	9 a. m.	56	102·4	Slight congestion of buccal papillæ; muzzle dry; slight discharge from nose and mouth, very slight from eyes; dung soft; not feeding well.
„ „	...	4-30 p. m.	88	106	Nose dry; slight discharge from mouth; congestion of buccal membrane and palate.
„ 2	6	8-30 a. m.	52, very weak.	102	Thick discharge from nostrils; mouth in same state; dung soft and slimy; rectum congested.
„ „	...	4-45 p. m.	88	105	Picking a little; discharge from nose.
„ 3	7	9 a. m.	78	102·4	Viscid discharge from both nostrils; nose dry; breath very offensive.
„ „	...	5-30 p. m.	96	103·4	Thick discharge from nose; throat apparently sore; constantly swallowing, off feed; no purging.

CASE No. 3—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. February 4	8	9 a. m.	70, weak	100·4	Nose dry; discharge from nostrils and mouth; conjunctiva injected; purging.
„ „	...	5-30 p. m.	72, weak	104·8	
„ 5	9	9-30 a. m.	74, very weak.	98·4	Slight discharge from nose and eyes; dung soft and contains blood.
„ „	...	5 p. m.	52, very weak.	100	Lying down and shivering; discharges as before; purging; buccal membrane congested.
„ 6	10	9 a. m.	Not perceptible.	96·6	Lying down; nose turned to right flank; dysenteric stools; breath very offensive; discharges as before; gradually sinking.
„ „	11	4-30 p. m.	Not perceptible.	98·2	Nose turned to the left flank; has not fed all day; keeps down.
„ 7	12	9-45 a. m.	Not perceptible.	95·8	Trembling all over; stools as before.
„ „	...	5 p. m.	...	...	Sinking; profuse discharge from nose and mouth; flies very troublesome.
„ 8	13	...	...	...	Dying; very offensive.
„ 9	14	...	...	...	Still lingering on in a very low and exhausted state; at 8 a. m. was bled to death for the purpose of a post-mortem examination. (*Vide* post-mortem No. 23.)

CASE No. 4.

Admitted 27th February 1870,—*Result*, **died.**—A 5 years old **bullock,** brought from a village near Madarkhat.—*Condition*, **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. January 27	...	8 a. m.	62, fair strength.	*Degrees.* 98·6	A bullock in fair health; dung soft, but apparently healthy; mouth healthy; pouch made behind left elbow and filled with excrement from No. 3 post-mortem.
„ „	...	5-15 p. m.	88, small.	103·6	Muzzle dry; back of left elbow much swollen and tender; feeds a little; 2 oz. hyposulphite of soda in congee water given three times in the day.
„ 28	1	8-30 a. m.	56, weak.	100·5	Tremor of body; dung soft and contains mucus and blood; tender and swollen about inoculated part; discharge.
„ „	...	5-45 p. m.	72	104·8	Elbow as before; dung soft; mouth hot.
„ 29	2	8-15 a. m.	72	100·4	Ruminating; dung a little hard; swelling a little reduced; muzzle dry.
„ „	...	4-55 p. m.	84	104·4	Feeding; mouth healthy; dung dry.
„ 30	3	1-30 p. m.	96	106·2	Dung healthy; feeding a little; mouth hot.
„ 31	4	8-45 a. m.	68, weak.	103·	Nose dry; mouth in good order; inoculated part not so much swollen; dung slimy; mucous membrane of rectum congested; straining; feeds.
„ „	...	6 p. m.	92	105·	Nose dry; mouth hot.
February 1	5	9 a. m.	60	102·2	Wound discharging a little; buccal papillæ a little congested; dung in good order.
„ „	...	4-20 p. m.	98	105·	Feeding; better.
„ 2	6	8 a. m.	54	99·	Viscid discharge from nose; mouth the same as yesterday; dung soft.
„ „	...	4-45 p. m.	84	104·4	Discharge from nose and mouth; offensive liquid dung; off feed.
„ 3	7	9 a. m.	66	99·6	Discharge from both nostrils; dry muzzle; stools gruel-like, slimy, and containing a little blood.
„ „	...	5-15 p. m.	Imperceptible.	100·	Does not feed; shivering, panting, and purging; discharges abundant; stools slimy and watery. Died during the following night. (*Vide* post-mortem No. 18.)

CASE No. 5.

Admitted 27th February 1870.—*Result,* **died** 4th February 1870.—An aged **cow,** brought from a village near Madarkhat.—*Condition,* **poor.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
January 27	...	8 a. m.	54	98·3 98·3	A cow in poor condition, but healthy; pouch made behind left elbow and filled with aphtha from No. 3 post-mortem.
,, ,,	...	5-45 p. m.	80, small.	103·8	Muzzle dry; roots of ears hot; tumefaction and tenderness behind left elbow.
,, 28	1	8-30 a. m.	54, weak.	99·4 100·	Mouth healthy; tongue furred; dung soft and slightly slimy; great swelling of inoculated part; feeding a little.
,, ,,	...	5-45 p. m.	76, weak.	105·	Mouth hot; dung in good order.
,, 29	2	8-15 a. m.	66, weak.	100· 99·4	Dry muzzle; dung in good order.
,, ,,	...	5 p. m.	90	105·2 104·8	Inoculated part painful and swollen; mouth hot; muzzle dry.
,, 30	3	1-30 p. m.	96	105·2 106·	Dung very soft; inoculated part very red and painful; buccal membrane slightly congested; feeding a little; nose dry.
,, 21	4	8-30 a. m.	72, weak.	100·6 100·8	Roots of buccal papillæ slightly congested; wound hot and painful, giving a little purulent discharge; dung soft and slimy, with a tinge of blood; feeding.
,, ,,	...	5 p. m.	94	106·6 106·8	A little discharge from inoculated part.
February 1	5	9 a. m.	54	102·6 102·2	Coat staring, probably from cold; tenderness along the spine; dung in good order; mouth and vagina healthy; wound discharging.
,, ,,	...	4-20 p. m.	96	106·2 106·4	Feeding; sore discharging; slight congestion of buccal membrane and roots of papillæ.
,, 2	6	8-30 a. m.	52	102· 102·4	Nose dry; mouth same as yesterday; wound open; discharge of pus; diarrhœa, watery stools; cough; discharge from nostrils; tenderness of the back; muscular twitching all over; mucous membrane of vagina healthy.
,, ,,	...	5 p. m.	80, very weak.	104· 104·2	Nose dry; mucous membrane of mouth congested; mucous membrane of vagina slightly congested; mucous discharge from vagina.
,, 3	7	9-15 a. m.	56	101·6 101·	Discharge from both nostrils; nose dry; mouth red; difficulty in swallowing; purging slimy stools with a little tinge of blood; slight congestion of vagina; wound discharging thick pus.
,, ,,	...	5-30 p. m.	Imperceptible.	100·8 100·2	Vagina congested; nose dry; purging severely; severe shivering; off feed; mouth cold.
,, 4	8	9 a. m.	...	...	Dying; great difficulty in breathing. Died about 10 a. m. (*Vide* post-mortem No. 19.)

CASE No. 6.

Admitted 9th March 1870.—*Result,* **discharged.**—A **bullock** (11 or 12 years old), bought for the purpose of experiment, and healthy.—*Condition* **poor,** reported not to have had *bussunto.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 9	...	9 a. m.	54, rather weak.	97·	Mouth examined and found healthy; appetite good; bowels in good order; pouch made behind right ear 1¼ in. deep × ¾ in. broad, and filled with tow soaked in excrement obtained from No. 4 Assam case, dried in Assam and softened in tepid water.
,, 10	...	9 a. m.	72	99·4	Very constipated; urine very high-coloured; no discharges; inoculated part hot and swollen; muzzle moist; feeding and drinking; eating green grass, Indian corn, and congee.
,, 11	...	6 a. m.	64	98·	Feeding well; no symptom of disease.
,, ,,	...	7 p. m.	...	102·	
,, 12	...	7-30 a. m.	56	98·	Feeding well; dung in good order; inoculated part swollen; no discharge; dung soft.
,, ,,	...	5-45 p. m.	80	101·4	
,, 13	...	7-15 a. m.	74	97·6	Dung very soft; feeding and drinking well; feverish; dung as usual; no discharge from wound; slight discharge from near nostril; gums slightly congested around teeth.
,, ,,	...	5-40 p. m.	80	103·4	

CASE No. 6—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 14	...	8-20 a. m.	60	99·	No fever; very slight discharge from nose and eyes; dung healthy; not feeding well; dung slightly coated with mucus.
,, ,,	...	7 p. m.	62	102·2	
,, 15	...	7-15 a. m.	66	98·8	Feeding well; dung soft.
,, ,,	...	5-30 p. m.	80	102·8	Feeding; discharge from nose and eyes (slight).
,, 16	...	7-15 a. m.	60, weak.	100·2	Feeding; dung soft; muzzle dry; buccal membrane congested.
,, ,,	...	6-35 p. m.	76	101·4	Feeding; dung soft.
,, 17	...	8 a. m.	54	99·4	Dung in good order.
,, ,,	...	5-30 p. m.	68	102·	Feeding heartily.
,, 18	...	8 a. m.	48	98·6	Feeding well; tongue as usual; dung rather soft; feeding well.
,, ,,	...	6 p. m.	58	101·2	
,, 19	...	8 a. m.	64	101·	Feeds well; urine high-coloured; a little congestion of buccal membrane, muzzle moist; dung healthy; a little feverish.
,, ,,	...	5-30 p. m.	...	102·6	Feeding well; dung healthy.
,, 20	...	8 a. m.	...	99·8	Feeding as usual; dung a little soft; continues well.
,, ,,	...	6 p. m.	54	102·6	
,, 21	...	8 a. m.	...	99·2	Continues well.
,, ,,	...	5-45 p. m.	...	101·6	
					This animal was disposed of. The Magistrate of Chooadangah reports, under date 31st July 1870, that no disease supervened.

CASE No. 7.

Admitted 9th March 1870.—A **she-goat** bought for the purpose of experiment; **healthy.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 9	...	9 a. m.	...	102·	Pouch made inside right thigh ½ in. deep by ½ in. broad, and filled with same material as in case No. 6.
,, 10	...	9 a. m.	...	101·8	Feeding and drinking well; inoculated part swollen; getting Indian corn, bhoosee, and green grass.
,, 11	...	6 a. m.	...	101·2	No symptoms of disease.
,, ,,	...	7 p. m.	...	102·2	
,, 12	...	7-30 p. m.	...	100·	Feeding well.
,, ,,	...	5-55 p. m.	..	102·	Ditto; dung healthy.
,, 13	...	3-25 a. m.	...	100·4	Feeding well.
,, ,,	...	5-55 p. m.	...	101·8	
,, 14	...	8-30 a. m.	...	102·	No symptoms of disease.
,, ,,	...	7 p. m.	...	102·4	
,, 15	...	7-35 a. m.	...	101·4	Feeding well.
,, ,,	...	5-47 p. m.	...	102·6	
,, 16	...	7-36 a. m.	..	101·8	Slight discharge from inoculated part.
,, ,,	...	6-45 p. m.	...	102·6	Feeding.
,, 17	...	8 a. m.	...	102·	Gums a little congested; feeding.
,, ,,	...	5-30 p. m.	...	102·6	
,, 18	...	8 a. m.	...	102·4	Feeds well.
,, ,,	...	6 p. m.	...	102·8	
,, 19	...	8 a. m.	...	100·8	As usual.
,, ,,	...	5-38 p. m.	...	102·8	
,, 20	...	8-10 a. m.	...	101·4	Feeds well; inoculated part discharging pus.
,, ,,	...	6 p. m.	...	102·6	
,, 21	...	8 a. m.	...	101·6	No sign of disease.
,, ,,	...	5-48 p. m.	...	102·8	
					This animal was disposed of.

CASE No. 8.

Admitted 9th March 1870.—A healthy **ram** bought for the purpose of experiment.—*Condition*, **very fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 9	...	9 a. m.	...	102·6	A little discharge from nose; mouth healthy; a pouch was made behind left ear ½ in. deep by ¼ in. broad, and filled with excrement as in case No. 6.
„ 10	...	9 a. m.	...	102·8	Inoculated part hot and swollen; no other symptoms; eating green grass, bhoosee, and Indian corn.
„ 11	...	6 a. m.	...	103·2	Feeding well.
„ „	...	7 p. m.	...	105·	
„ 12	...	7-30 a. m.	...	102·	Feeds well; no symptoms of disease.
„ „	...	6-5 p. m.	...	102·	Feeds well; dung healthy.
„ 13	...	7-30 a. m.	...	100·6	Feeding well.
„ „	...	6 p. m.	...	104·	
„ 14	...	8-35 a. m.	...	103·	No symptoms of disease.
„ „	...	7 p. m.	...	102·2	
„ 15	...	7 30 a. m.	...	101·6	Feeding well; dung healthy; a little discharge from nose.
„ „	...	5-40 p. m.	...	103·6	
„ 16	...	7-15 a. m.	...	101·	Discharge from inoculated part; doing well; feeding.
„ „	...	6-40 p. m.	...	102·4	
„ 17	...	8 a. m.	...	102·4	Doing well; purulent discharge from inoculated part.
„ „	...	5-30 p. m.	...	102·4	
„ 18	...	8 a m.	...	101·6	Doing well.
„ „	...	6 p. m.	...	102 6	
„ 19	...	8 a. m.	...	101·2	No sign of disease.
„ „	...	5-45 p. m.	...	103·2	
„ 20	...	8-8 a. m.	...	101·2	Wound healed.
„ „	...	6 p. m.	...	102·8	
„ 21	...	8 a. m.	...	103·6	Doing well.
„ „	...	5-50 p. m.	...	104·8	
					This animal was disposed of.

CASE No. 9.

Admitted 10th March 1870.—An aged **bullock** bought for the purpose of experiment.—*Condition*, **healthy.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 10	...	9 a. m.	60	99·	A pouch was made behind left ear, 1 in. broad by 1½ in. deep, and filled with nasal discharge from case No. 30. Hospital case.
„ 11	...	6 a. m.	60	100·	Feeding well; no symptom of disease.
„ „	...	7 p. m.	...	103·2	
„ 12	...	7-30 a. m.	60	99·4	Bowels in good order; feeding well; inoculated part tumid; no discharge.
„ „	...	5-50 p. m.	68	102·2	Dung soft; feeding well.
„ 13	...	7-20 a. m.	66	98·	Dung continues soft; feeding as usual.
„ „	...	5-50 p. m.	78	102·2	Feeding; dung as usual; inoculated part slightly swollen.
„ 14	...	8-25 a. m.	50	99.4	Nose rather dry; feeding well; a little discharge from eyes; bowels in good order.
„ „	...	7 p. m.	68	102·4	Dung soft.
„ 15	...	7-25 a. m.	80	100·4	Feeding; dung soft.
„ „	...	5-35 p. m.	86	103·6	
„ 16	...	7-15 a. m.	64	100·4	Bowels relaxed; slight discharge from eyes; mouth all right; discharge of matter from wound.
„ „	...	6-30 p. m.	80	102·4	Feeding well; dung as usual.
„ 17	...	8 a. m.	44	99·4	Discharge from inoculated part; dung soft; feeds well; mouth in good order.
„ „	...	5-30 p. m.	72	102·2	
„ 18	...	8 a. m.	50	97·4	Feeding well; dung healthy.
„ „	...	6 p. m.	60	101·4	
„ 19	...	8 a. m.	48	99·8	Feeding well; discharge of pus from wound.
„ „	...	5-35 p. m.	...	102 8	
„ 20	...	8 a. m.	...	99·4	Dung a little soft.
„ „	...	6 p. m.	50	102·4	Feeding well; dung continues healthy.
„ 21	...	8 a. m.	...	99·4	Ditto ditto.
„ „	...	5-45 p. m.	...	102·4	No symptom of disease.
July 31	...	...	...	...	This animal was disposed of.
					The Assistant Magistrate of Chooadangah reports that no disease supervened.

CASE No. 10.

Admitted 10th March 1870.—A healthy **he-goat** bought for the purpose of experiment.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
March 10	...	9 a.m.	...	102·	A pouch ½ inch by ½ inch made inside of right hind leg, and filled with excrement from case No. 30. Hospital case.
„ 11	...	6 a.m.	...	103·	Feeding heartily.
„ „	...	7 p.m.	...	103·2	
„ 12	...	7-30 a.m.	...	104·6	Not symptom of disease.
„ „	...	6 p m.	...	104·6	Feeds well; dung healthy; discharge from inoculated part.
„ 13	...	7-25 a.m.	...	105·4	Not feeding; discharge of unhealthy colour from inoculated part.
„ „	...	5-57 p.m.	...	106·2	
„ 14	...	8-35 a.m.	...	107·*	Feeds little; wound very unhealthy; slight discharge from inoculated part.
„ „	...	7 p.m.	...	106·4	
„ 15	...	7-35 a.m.	...	105·2	Feeds little; wound unhealthy.
„ „	...	5 49 p.m.	...	106·	Feverish.
„ 16	...	7-15 a.m.	...	105·	Wound looks healthier; is being dressed with camphorretted oil.
„ „	...	6-55 p.m.	...	105·2	Feeding.
„ 17	...	8 a.m.	...	106·	Wound looks healthier.
„ „	...	5-30 p.m.	...	104·8	Feeds a little.
„ 18	...	8 a.m.	...	103·4	Feeds well; wound looks well.
„ „	...	6 p.m.	...	106·2	
„ 19	...	8 a.m.	...	103·2	Feeding little; wound doing well.
„ „	...	5-40 p.m.	...	103·2	
„ 20	...	8-13 a.m.	...	101·6	Wound doing well, but discharging matter; feeding.
„ „	...	6 p.m.	...	103·8	
„ 21	...	8 a.m.	...	102·4	Feeding well.
„ „	...	5-49 p.m.	...	103 6	
					This animal was disposed of, no symptoms of rinderpest having appeared.

CASE No. 11.

Admitted 21st December 1870.—A **bullock**, aged 13 years; *condition*, **poor;** had a severe attack of rinderpest 10 years ago.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 21	...	10 a.m.	...	...	To be housed with the cattle in hospital affected with rinderpest, and to be fed on the food left by the rinderpest cattle; has a large sore on the ridge of the neck.
„ 31	...	8-40 a.m.	...	100·6	Doing well and feeding all right. A piece of cloth soaked in fæcal discharge from cattle affected with rinderpest is to be kept constantly on the sore from to-day.
„ „	...	p.m.	...	102·8	
1871.					
January 7	...	a.m.	...	101·2	Continuing well and shows no signs of rinderpest; inoculated with aphtha from mouth of case No. 68 on right cheek by scarification and also subcutaneous introduction.
„ „	...	p.m.	...	102·6	
„ 22	...	a.m.	...	...	The animal not having shown the least symptoms of disease is discharged very much improved in condition.

CASE No. 12.

Admitted 21st December 1870.—**A cow**, aged 12 years; *condition*, **poor;** had a severe attack of rinderpest 10 years ago.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
December 21	...	...	...	...	To be housed with the cattle in hospital affected with rinderpest, and to be fed on the food left by the rinderpest cattle.
„ 31	...	8-35 a.m.	...	101·	Animal improving in condition, and continues in good health in every respect.
„ „	...	p.m.	...	101·8	
1871.					
January 7	...	a.m.	...	100·8	No sign of rinderpest; improving in condition, and in good health; is inoculated with aphtha taken from case No. 68 on the right cheek by scarification and also by subcutaneous introduction.
„ „	...	p.m.	...	102·8	
„ 22	...	a.m.	...	...	Has not shown any sign of rinderpest, and is discharged very much improved in condition.

CASE No. 13.

Admitted 21st December 1870.—A **cow**, aged 13 years; *condition*, **poor;** had a severe attack of rinderpest 10 years ago.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
December 21	...	10 a.m.	...	...	To be housed with the cattle in hospital affected with rinderpest, and to be fed on the food left by the rinderpest cattle.
„ 24	...	9 a.m.	...	...	Inoculated at the posterior part of the off-shoulder with the nasal discharge of an animal suffering from rinderpest.
„ 31	...	8-35 a.m.	...	100·8	Swelling around the part inoculated, tender to the touch; serous discharge from wound; feeding and doing well.
„ „	...	p.m.	...	102·6	
1871.					
January 7	...	a.m.	...	101·	Inoculated part healing, but there still remains a good deal of subcutaneous exudation; animal in good health and slightly improved in condition.
„ 22	...	...	...	...	Has shown no sign of rinderpest, and is discharged very much improved in condition.

CASE No. 14.

Admitted 21st December 1870.—A **cow**, aged 13 years; *condition*, **poor;** had a severe attack of rinderpest 10 years ago.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870.				*Degrees.*	
December 21	...	...	...	...	To be housed with the cattle in hospital affected with rinderpest, and to be fed on the food left by the rinderpest cattle.
„ 24	...	9 a.m.	...	...	Inoculated behind the near shoulder with a small portion of dysenteric fæces of a cow suffering from rinderpest.
„ 31	...	8-30 a.m.	...	100·4	Considerable swelling around the inoculated part, and of the axilla; wound suppurating.
1871.					
January 7	...	a.m.	...	100·8	Inoculated part healing, but the absorbent vessels running in the direction of axilla are corded.
„ „	...	p.m.	...	102·6	
„ 22	...	...	...	...	Has not shown any symptoms of rinderpest; is discharged very much improved in condition.

CASE No. 15.

Admitted 21st December 1870.—A **cow,** aged 13 years; *condition,* **poor;** had a severe attack of rinderpest 10 years ago.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 21	...	...	...	*Degrees.* ...	To be housed with the cattle in hospital affected with rinderpest, and to be fed on the food left by rinderpest cattle.
„ 24	...	9 a. m.	...	...	Inoculated behind its off-shoulder with dysenteric fæces of a cow suffering from rinderpest.
„ 31	...	8-30 a. m.	...	101·4	The inoculated part suppurating, and there is much subcutaneous exudation around the wound and in the axilla.
„ „	...	p. m.	...	102·2	
1871. January 7	...	a. m.	...	101·2	Wound suppurating; to be kept clean; improving in condition.
„ „	...	p. m.	...	101·8	
„ 22	...	a. m.	...	...	Has not shown any symptoms of rinderpest; has much improved in condition, and is discharged.

CASE No. 16.

Admitted 21st December 1870.—A **cow,** aged 3 years, has never had rinderpest.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870. December 21	...	...	...	*Degrees.* ...	In good health and fair condition; is housed with cattle affected with rinderpest, and fed on the food left by rinderpest cattle.
„ 26	...	a. m.	...	...	Very dull; ears drooping; very dry muzzle; coat staring; mouth hot; not feeding.
„ 27	...	a. m.	...	Much increasing.	Fever; pulse 70; dry muzzle; very hot mouth; dung soft and coated with mucus; feeding a little.
„ 28	...	a. m.	...	105·8	Seems better; feeding fairly, but dung is hard and coated with mucus.
„ 30	...	a. m.	...	104·8	Gums congested; muzzle dry; cough, with sore throat; feeding; coat staring.
„ „	...	p. m.	...	105·4	Not feeding well; back arched; gums very much congested; fever.
„ 31	...	a. m.	...	104·8	Very dull and weak; passes a little dung covered with mucus and blood; muzzle very dry, showing fissures and cracks; aphthous deposit on gums; feeding a little.
„ „	...	p. m.	...	105·2	
1871. January 1	...	a. m.	...	102·2	Eats a little grass; dung soft, with less mucus and blood; seems better.
„ „	...	p. m.	...	103·8	
„ 2	...	a. m.	...	102·4	On closely examining the floor of the mouth, the gums on the inside are found coated with a layer of yellow aphtha: the entire mucous membrane remains congested; muzzle remains dry; patient on the whole is better and feeding a little.
„ „	...	p. m.	...	102·2	
„ 3	...	a. m.	...	100·6	Patient doing well; feeding better. Give the following— Epsom salt ... ... 6 oz. Sulphur ... ... 1 oz. Ginger ... ... ½ oz.
„ „	...	p. m.	...	101·8	
„ 4	...	a. m.	...	102·2	Bowels slightly relaxed; patient evidently better.
„ 7	...	a. m.	...	102·6	Patient continues getting better; gums are healthier, and there is only a very slight trace of aphthous deposit.
„ „	...	p. m.	...	103·	
„ 28	...	a. m.	...	...	Has continued doing well, and is now quite well; has lost very little in condition, and is discharged.

CASE No. 17.

Admitted 21st December 1870.—*Result*, **died** 27th December 1870.—A **cow** bought in the Kidderpore market.—*Condition*, **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 21	...	...	...	...	This animal is to be housed with the cattle suffering from rinderpest, and fed on food left by those cattle.
„ 26	1	8 a.m.	...	...	Very dull; ears drooping; muzzle dry; discharge from nose; congestion of gums; not feeding well; coat staring.
„ 27	2	8 a.m.	...	...	Very ill; can hardly walk; not feeding; congestion of gums; dung soft and coated with mucus; vagina slightly congested.
„	...	4 p.m.	...	...	Died. (*Vide* post-mortem No. 75).

CASE No. 18.

Admitted 24th December 1870.—A **sheep,** aged 2 years.—*Condition*, **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	...	...	...	Housed and fed with cattle affected with rinderpest.
„ 31	...	a.m.	...	103·4	Shows no signs of rinderpest; is inoculated in the off-cheek with aphtha of a cow severely affected with rinderpest.
„	...	p.m.	...	104·4	
1871.					
January 28	...	...	...	...	Has not shown any signs of rinderpest; wound on cheek has healed; animal much improved in condition; discharged.

CASE No. 19.

Admitted 24th December 1870.—A **sheep,** 2 years old.—*Condition*, **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	...	...	...	Housed and fed with cattle affected with rinderpest; inoculated behind the near shoulder with the fæces of a bullock affected with rinderpest.
„ 31	...	a.m.	...	103·2	An abscess has formed at the part inoculated; is opened; a large quantity of matter escaped, but a cord remains firmly attached, extending 2 inches in the direction of the axilla; feeding well, and showing no signs of rinderpest.
„	...	p.m.	...	102·8	
1871.					
January 1	...	a.m.	...	101·6	The gums are slightly congested; in other respects the animal is doing well.
„	...	p.m.	...	102·8	
„ 25	...	a.m.	...	...	Has shown no symptoms of rinderpest; discharged.

CASE No. 20.

Admitted 24th December 1870.—A **she-goat,** aged 6 months.—*Condition*, **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	...	...	...	Housed and fed with cattle suffering from rinderpest.
1871.					
January 25	...	...	...	...	Has not shown the least sign of being affected with rinderpest, and is discharged.

CASE No. 21.

Admitted 24th December 1870.—A **sheep,** 6 months old.—*Condition,* **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	...	...	...	To be housed and fed with cattle suffering from rinderpest.
„ 31	...	a. m.	....	103·6	Remains unaffected; is now inoculated behind the off-shoulder with aphtha taken from the mouth of a cow severely affected with rinderpest.
1871.					
January 5	...	a. m.	...	105·2	A viscid discharge from nostrils; gums slightly congested; animal dull; feeding but little.
„ 7	...	a. m.	...	...	Gums remain much congested; nasal discharge very viscid; coughs and sneezes; inoculated part healing; feeding a little.
„ 8	...	a. m.	...	...	Is purging; feeding a little.
„ 12	...	a. m.	...	...	Is altogether better; appetite improving; not purging.
„ 18	...	a. m.	...	...	Feeding well, and better in every respect.
„ 28	...	a. m.	...	...	Has steadily improved, and is now quite well. Is killed in order that an examination may be made. No trace of rinderpest found.

CASE No. 22.

Admitted 24th December 1870.—A **ram,** 7 months old.—*Condition,* **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	...	...	...	Inoculated behind off-shoulder with the nasal discharge of a bullock affected with rinderpest.
„ 30	...	a. m.	...	...	Gums very much congested, but feeding, and in other respects well.
„ 31	...	a. m.	...	102·6	Part inoculated discharging pus; cording of the absorbent vessels running to the axilla; feeding well.
„ „	...	p. m.	...	103·4	Very dull; dry muzzle; fever; not feeding; discharge from nose; lying down.
1871.					
January 1	...	a. m.	...	101·8	Remains dull; not feeding; gums much congested; granular deposit on mucous membrane inside the upper lip.
„ 2	...	8 a. m.	...	102·8	Very dry muzzle; viscid discharge from nose; deep congestion and aphthous deposit on gums; dull; not feeding well.
„ „	...	p. m.	...	103·2	
„ 3	...	a. m.	...	102·6	Same as yesterday.
„ „	...	p. m.	...	103·4	
„ 7	...	a. m.	...	103·2	Better; gums still slightly congested, but no aphthous deposit on them; still granular concretion inside upper lip.
„ „	...	p. m.	...	103·8	
„ 9	...	a. m.	...	102·4	Well; inoculated part quite healed; feeding.
„ 25	...	a. m.	...	...	Discharged quite well.

CASE No. 23.

Admitted 24th December 1870.—*Result,* **died** 9th January 1871.—A **ewe** brought from village Culna.—*Condition,* **fair**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	. .	...	...	This animal was purchased by the Commission on the 24th December 1870, and allowed to associate with the cattle affected with rinderpest. Up to the 30th idem it showed no signs of disease, and on the following day was inoculated behind the off-shoulder with aphtha removed from the carcass of a cow (Hospital case No. 60) that had died of rinderpest on the 29th.
„ 31	...	8 a. m.	...	104·2	Continues well.
„ „	...	6 p. m.	...	103·6	
1871.					
January 1	...	8 a. m.	...	103·4	Ditto.
„ „	...	6 p. m.	...	104·	

CASE No. 23—*continued.*

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 2	...	8 a.m.	...	104·2	Continues well.
,, ,,	...	6 p.m.	...	104·8	
,, 3	...	8 a.m.	...	103·8	Ditto.
,, ,,	...	6 p.m.	...	104·6	
,, 4	...	8 a.m.	...	103·6	Ditto.
,, ,,	...	6 p.m.	...	103·8	
,, 5	1	8 a.m.	...	105·4	The animal is off feed this morning, and there is a sticky discharge from her nose; the gums are congested and tumid.
,, ,,	...	6 p.m.	...	105·6	
,, 6	2	8 a.m.	...	104·8	In the same state.
,, ,,	...	6 p.m.	...	104·8	
,, 7	3	8 a.m.	...	103·6	The gums are very much congested, and there are excoriations around teeth and under upper lip, with aphthous deposit; the animal is not feeding, but purging and lying down; coughs very much, and there is very viscid discharge from nostrils.
,, ,,	...	6 p.m.	...	103·4	
,, 8	4	8 a.m.	...	103·4	The gums are very much congested, with aphthous deposit thereon, as also on the upper lip.
,, ,,	...	6 p.m.	...	104·2	
,, 9	5	8 a.m.	...	101·2	Worse.
,, ,,	...	6 p.m.	...	101·8	Died. (Post-mortem No. 86).

CASE No. 24.

Admitted 24th December 1870.—A **sheep,** 3 years old.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	...	...	...	Allowed to mix freely and feed with the cattle affected with rinderpest.
,, 31	...	a.m.	...	102·8	Remains in good health; fæcal discharges of cattle affected with rinderpest to be rubbed several times a day over the abdomen and groins.
...	...	p.m.	...	103·4	
1871.					
January 17	...	a.m.	...	...	Remains well; continue rubbing in fæcal matter of cattle affected with rinderpest.
,, 28	...	a.m.	...	...	Has shown no symptom of rinderpest; has improved in condition, and is discharged.

CASE No. 25.

Admitted 24th December 1870.—A **she-goat,** aged 7 months.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 24	...	a.m.	...	...	Inoculated behind the near shoulder with nasal discharge from a cow affected with rinderpest.
...	...	p.m.	...	104·4	
,, 31	...	a.m.	...	104·6	A slight purulent discharge from the wound; little or no swelling around; appetite not good; slight discharge from nose; coat staring; looks dull.
,, ,,	...	p.m.	...	105·2	
1871.					
January 1	...	a.m.	...	103·8	Gums very much congested and tumid; viscid discharge from nose; coat staring; dung very soft; dull and very weak.
,, ,,	...	p.m.	...	103·6	
,, 2	...	a.m.	...	101·8	Aphthous concretion under the upper lip; sore throat; slight difficulty in breathing; not feeding well.
,, ,,	...	p.m.	...	102·8	
,, 5	...	a.m.	...	103·4	Very viscid discharge from nose, more or less plugging in the nostrils; coughing; sore throat; aphtha inside upper lip; dung very soft; inoculated part cicatrizing; feeding a little.
,, ,,	...	p.m.	...	103·6	
,, 7	...	a.m.	...	103·8	As in last report; feeding better.
,, ,,	...	p.m.	...	103·8	
,, 12	...	a.m.	...	101·6	Better in every respect; feeding well and rapidly recovering.
,, ,,	...	p.m.	...	103·2	
,, 17	...	a.m.	...	...	Recovered; feeding well; before closing the hospital the animal was destroyed in order that a post-mortem examination might be held. (*Vide* post-mortem No.

CASE No. 26.

Admitted 24th December 1870.—*Result,* **died** 1st January 1871.—A **she-goat** bought in village Culna.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	This animal, in good health, is purchased by the Commission for experimental purposes, and is inoculated behind the off-shoulder with the nasal discharge of bullock (No. 25) suffering from rinderpest.
December 24	1	6 p.m.	...	104·	During these days the animal showed no signs of disease.
„ 25	2	8 a.m.	...	100·8	
„ „	...	6 p.m.	...	101·8	
„ 26	3	8 a.m.	...	105·6	
„ „	...	6 p.m.	...	104·4	
„ 27	4	8 a.m.	...	104·2	
„ „	...	6 p.m.	...	104·8	
„ 28	5	8 a.m.	...	103·6	
„ „	...	6 p.m.	...	104·2	
„ 29	6	8 a.m.	...	103·2	
„ „	...	6 p.m.	...	104·4	
„ 30	7	8 a.m.	...	101·4	Discharge from the inoculated part. The animal is purging and its coat is staring; the gums are congested.
„ „	„	6 p.m.	...	105·2	
„ 31	8	8 a.m.	...	102·8	Purulent discharge from wound; swelling of axilla and of elbow from subcutaneous infiltration; the animal is looking dull and feeding but little; lame in the off-elbow.
„ „	„	6 p.m.	...	104·6	The muzzle is very dry, and there is discharge from the nose; the mouth is hot, and the animal is lying down; not feeding.
1871. January 1	9	8 a.m.	...	103·6	There is very viscid discharge from eyes and nose; the animal is purging, and the coat is staring; the gums are congested, but there are no excoriations; it is very weak and walks with difficulty, from weakness and lameness in shoulder; the back is roached. Died. (*Vide* post-mortem No. 80).

CASE No. 27.

Admitted 29th December 1870.—*Result,* **died** 9th January 1871.—A **she-goat** bought for experimental purposes.—*Condition,* **fair.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degrees.*	
December 31	...	8 a.m.	...	102·6	This animal is to associate with cattle suffering from rinderpest and to feed on the food left by them.
„ „	...	6 p.m.	...	104·4	
1871. January 1	...	8 a.m.	...	100·4	
„ „	...	6 p.m.	...	104·4	
„ 2	...	9 a.m.	...	102·8	
„ „	...	6 p.m.	...	103·6	
„ 3	...	8 a.m.	...	103·4	
„ „	...	6 p.m.	...	104·2	
„ 4	...	8 a.m.	...	103·6	
„ „	...	6 p.m.	...	103·8	
„ 5	...	8 a.m.	...	104·4	
„ „	...	6 p.m.	...	104·6	
„ 6	...	8 a.m.	...	103·8	
„ „	...	6 p.m.	...	104·4	
„ 7	...	8 a.m.	...	103·6	Does not show any signs of disease.
„ „	...	6 p.m.	...	103·8	
„ 8	...	8 a.m.	...	103·8	Very much purged; slight congestion of gums.
„ „	...	6 p.m.	...	103·8	
„ 9	...	8 a.m.	...	104·4	Very ill; dying. Died at 6 p.m. (*Vide* post-mortem No. 85.)
„ „	...	5 p.m.	...	99·2	

CASE No. 28.

Admitted 19th December 1870.—A **she-goat,** 18 months old.—*Condition,* **good;** purchased in Calcutta for experiment.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 19	...	...	...	...	Housed and fed with cattle suffering from rinderpest.
„ 25	...	...	...	...	Has shown no symptom of rinderpest, and is well and in good condition Discharged.

CASE No. 29.

Admitted 24th December 1870.—A **she-goat,** a year old.—*Condition,* **fair;** bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 24	...	...	...	...	Housed and fed with cattle affected with rinderpest.
1871. January 23	...	...	...	...	Has shown no sign of rinderpest, and is discharged in good condition.

CASE No. 30.

Admitted 25th December 1870.—A **sow,** 6 months old.—*Condition,* **fair;** in good health; bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 25	...	...	...	...	Inoculated with the fæces of a bullock affected with rinderpest.
1871. January 22	...	...	...	...	The animal has been brought for the inspection of the Commission, and is found to be in good health, and has not shown any sign of rinderpest.

CASE No. 31.

Admitted 25th December 1870.—A **boar,** 8 months old.—*Condition,* **fair;** in good health; bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 25	...	...	...	...	Inoculated behind the near shoulder with aphtha from the omasum of a cow which has died of rinderpest.
1871. January 7	...	...	...	...	The boar is produced for the inspection of the Commission, and is found in good health.

CASE No. 32.

Admitted 25th December 1870.—A **sow**, 4 months old, bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 25	...	...	...	...	Inoculated behind the near shoulder with aphtha removed from the omasum of a bullock which has died of rinderpest.
1871. January 7	...	...	...	...	The owner states that the sow has been killed, and eaten yesterday by jackals.

CASE No. 33.

Admitted 25th December 1870.—Four **cocks** and one **hen,** bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 25	...	...	...	...	Inoculated under the wings with aphtha removed from the omasum of a cow that died last night of rinderpest.
„ 31	...	...	...	...	Abscesses formed on the parts inoculated.
1871. January 17	...	...	...	...	Wounds of all have healed, and all the birds remain in good health, have very much improved in condition, and have fed chiefly on gruel and grain left by the cattle affected with rinderpest.

CASE No. 34.

Admitted 25th December 1870.—A **dog,** 3 years old, bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 25	...	...	...	...	Inoculated on the back of the neck with aphtha of the omasum of a bullock that died last night of rinderpest.
„ 29	...	...	...	...	Has shown no symptom of rinderpest, but died suddenly this morning from congestion of the brain.

CASE No. 35.

Admitted 31st December 1870.—Two **ducks,** bought for experimental purposes.

Day of		Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
Month.	Disease.				
1870. December 31	...	...	...	...	Inoculated under the wings with aphtha from the gums of a cow severely affected with rinderpest.
1871. January 17	...	...	...	...	The inoculated parts healed; the ducks remained in good health.

CASE No. 36.

Admitted 1st January 1871.—A **cow,** aged 6 years.—*Condition,* **good.**

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871. January 1	...	...	...	...	This cow happens to be kept by her owner in a shed 24 feet distant from the experimental hospital; she was born in this shed; has never had rinderpest, and has been kept in this shed from the opening of the hospital on the 12th December 1870; the shed is on the north side of the hospital.
„ 10	...	...	...	...	Reported by the owner to be off feed and ill; the owner and attendant in charge have not been on the hospital premises, and no one of the hospital has been on the owner's premises; the cow is found to be dull, coat staring, muzzle dry, ears drooping, gums slightly congested, a little discharge from mouth, bowels slightly constipated, and dung coated with slime; is eight months in calf.
„ 11	...	...	...	...	The animal is better and is feeding.
„ 12	...	...	...	...	Going on well; gums not congested; feeding; bowels in good order.
„ 28	...	...	...	...	The cow remains in good health.

CASE No. 37.

Admitted 2nd January 1871.—A **dog,** 2 years old, bought for experimental purposes.

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871. January 2	...	...	...	...	Inoculated with discharge from the eyes of a bullock affected with rinderpest.
„ 17	...	...	...	...	Wound is healed; the dog remains well.
„ 22	...	...	...	...	Is in good health, and discharged.

CASE No. 38.

Admitted 2nd January 1871.—Three **cats,** bought for experimental purposes.

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871. January 2	...	...	...	...	Inoculated on the head between the ears with nasal discharge of a bullock that died of rinderpest.
„ 7	...	...	...	...	Wounds suppurating.
„ 17	...	...	...	...	Wounds healed.
„ 22	...	...	...	...	Remain in good health, and are discharged.

CASE No. 39.

Admitted 4th January 1871.—A **chesnut mare,** 5 years old, 12 hands high, bought for experimental purposes.

Day of Month.	Day of Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871. January 4	...	a. m.	...	*Degrees.* ...	Inoculated at the root of the off-ear with dysenteric fæces of a bullock severely affected with rinderpest; to be fed on the gruel and green grass left by the cattle affected with rinderpest.
		p. m.	...	99·4	
„ 7	...	a. m.	...	101·	Serous discharge from inoculated part; feeding and doing well.
		p. m.	...	101·8	
„ 17	...	a. m.	...	100·8	Inoculated part healed; the mare is improving much in condition.
		p. m.	...	100·2	
„ 24	...	...	...	...	Has remained in perfect health, and is very much improved in condition.

CASE No. 40.

Admitted 5th January 1871.—A **cow,** 5 years old, bought for experimental purposes.—*Condition,* **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 5	...	...	...	...	This cow, which has never had rinderpest, is placed in a yard on the eastern side adjoining the hospital in which the litter of the hospital is deposited; and the cesspool which receives the filth from the hospital is also in this yard; the cow is kept tied up in a shed made of matting; she is provided with food brought direct from the market, not from the hospital; the attendant is a man employed to attend solely to this animal, and is not permitted to enter the hospital yard, and is directed not to go near any other cattle elsewhere; the shed is at a distance of 20 yards from the hospital litter, and 40 yards from the hospital yard wall; the man in charge of the cow in going to and from the shed has not to pass over the hospital litter; the yard in which the shed is, is well fenced in, so that no cattle, sheep, or goats can enter; the prevailing wind is from the north-west.
„ 27	...	a. m.	...	...	The cow has remained in good health, and showed no sign of being affected with rinderpest.

CASE No. 41.

Admitted 5th January 1871.—A **cow,** 7 years old, bought for experimental purposes.—*Condition,* **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 5	...	a. m.	...	100·4	She is placed by herself in a stall raised 6 feet in a corner of the hospital yard; the stall is to be kept well covered with McDougall's powder, and the walls are to be frequently washed with the same powder; sulphur is also to be burnt in the stall, all but closed, four times every day; the cow is to be fed on food fresh and good, not on grass or gruel left by the sick animals; the temperature of the body per rectum or vaginam is to be regularly taken.
...	...	p. m.	...	101·8	
„ 25	...	...	...	...	The cow has remained in good health; the thermometer has shown a range from 100 to 101·8 and on two occasions 102·2. She has shown no sign of rinderpest.

CASE No. 42.

Admitted 5th January 1871.—A **bull,** 2½ years old, bought for experimental purposes.—*Condition,* **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 5	...	...	...	...	This bull is placed in the adjoining yard to the west of the hospital, 22 yards from the wall of the hospital yard. He is to be kept, fed, and shedded in a manner similar to the cow No. 40, and is to be attended to by another man, who has been ordered never to go near the hospital or other cattle elsewhere; no hospital litter, &c., is deposited in this yard; the prevailing wind is from the north-west.
„ 8	...	a. m.	...	101·2	Two sheep, Nos. 21 and 23, which have been 15 days in the hospital yard, living and feeding with cattle affected with rinderpest, are this morning placed in the shed with the bull, and they are all to feed together.
„ 10	...	...	...	...	One of the sheep, No. 23, died this day of rinderpest.

CASE No. 42—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 14	...	...	...	...	The thermometer up to this date has given a temperature from 100 to 102, but this evening it rises to 103·2. The bull is feeding and doing well.
„ 15	...	a. m.	...	101·8	Continues to feed well.
„ „	...	p. m.	...	103·2	
„ 16	...	a. m.	...	102·4	Ditto.
„ „	...	p. m.	...	103·4	
„ 17	...	a. m.	...	101·8	Ditto.
„ „	...	p. m.	...	103·4	
„ 18	...	a. m.	...	102·8	Not feeding well since last night; shows a slight increase in temperature, and is a little dull.
„ „	...	p. m.	...	104·2	
„ 19	...	a. m.	...	102·6	
„ „	...	p. m.	...	104·	
„ 20	...	a. m.	...	102·6	
„ „	...	p. m.	...	104·2	
„ 21	...	a. m.	...	101·8	Feeding and looking better.
„ „	...	p. m.	...	103·2	
„ 22	...	a. m.	...	102·4	Feeding well. Sheep No. 21 remains in good health in the stall.
„ „	...	p. m.	...	103·4	
„ 25	...	...	...	...	If this bull has been affected, the attack must have been very mild; he is discharged under the head of "unaffected."

CASE No. 43.

Admitted 7th January 1871.—A **cow,** 4½ years old, bought for experimental purposes.—*Condition,* **fair;** in good health.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 7	...	a. m.	...	100·2	This cow has never had rinderpest; is inoculated by subcutaneous introduction and scarification in the perineum and left cheek just below the eye with aphthous matter taken from the upper lip and the nasal discharge of sheep No. 23, which has died of rinderpest; is kept outside the hospital with No. 44 in a shed by themselves, and are to be attended to by a man who is never to enter the hospital or go near other cattle; the food is to be supplied direct from the market.
„ „	...	p. m.	...	102·2	
„ 9	...	a. m.	...	102·8	Feeding well.
„ „	...	p. m.	...	103·8	
„ 10	...	a. m.	...	102·6	Ditto.
„ „	...	p. m.	...	105·4	
„ 11	...	a. m.	...	102·8	Ditto.
„ „	...	p. m.	...	105·8	
„ 12	...	a. m.	...	104·4	Ditto.
„ „	...	p. m.	...	105·4	
„ 13	...	a. m.	...	103·8	Still feeding, but the muzzle is dry; the mouth is a little hot, and the gums are slightly congested.
„ „	...	p. m.	...	105·2	
„ 14	...	a. m.	...	103·6	The gums are much congested; there are a few specks of aphthous excoriation seen on them; the inoculated part is discharging pus; animal shivering and not feeding.
„ „	...	p. m.	...	105·4	
„ 15	...	a. m.	...	101·4	Muzzle very dry; purging watery stools mixed with mucus; lower lip excoriated with much aphthous deposit; viscid discharge from the eyes; animal weak, shivering, and off feed.
„ „	...	p. m.	...	102·4	
„ 16	...	a. m.	...	101·	Green grass and rice gruel only to be given as food (straw and oil-cake to be discontinued) to afford a chance of recovery.
„ „	...	p. m.	...	101·2	
„ 17	...	a. m.	...	101·	Removed to the hospital; coughs; muzzle dry; œdema around eyes; coat staring; back arched, is very much tucked up; tremor all over body; spasmodic twitchings of shoulder and neck; excoriations of gums and floor of mouth; breath offensive; has little appetite.
„ 18	...	a. m.	...	101·4	Feeding a little better.
„ „	...	p. m.	...	101·8	
„ 19	...	a. m.	...	100·2	Gums becoming more healthy; no aphthous deposit now; feeding fairly.
„ „	...	p. m.	...	101·8	
„ 20	...	a. m.	...	99·8	Better in every respect.
„ „	...	p. m.	...	101·6	
„ 21	...	a. m.	...	101·2	Excoriations cicatrizing; patient doing well.
„ „	...	p. m.	...	101·4	

CASE No. 43—*continued.*

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1870.				*Degree.*	
January 22	...	a. m. ...	...	101·	Doing well.
,, ,,	...	p. m. ...	...	101·8	Not feeding; shivering. Give country spirit 1 oz. and camphor 1 dr.
,, 23	...	a. m. ...	...	101·6	Looking better; feeding a little.
,, ,,	...	p. m. ...	...	101·8	Repeat dose.
,, 24	...	a. m. ...	...	101·4	Going on well. Sulphate of iron 1 dr. a. m. and p. m.
,, 27	...	a. m. ...	...	...	Tonic medicine has been continued; the animal is well, and discharged.

CASE No. 44.

Admitted 7th January 1871.—*Result,* **died** 16th January 1871.—A **heifer,** 2 years old, bought for experimental purposes.—*Condition,* **fair.**

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 7	...	8 a. m.	...	...	This animal was quite healthy when brought into the hospital, and was inoculated inside the right thigh and on the udder with the nasal discharge of a sheep (No. 23) suffering from rinderpest by subcutaneous introduction and scarification; the owner asserts that she has never had rinderpest; is housed with No. 43 cow.
,, 8	...	8 a. m.	..	101·4	
,, ,,	...	6 p. m.	...	101·4	
,, 9	...	8 a. m.	...	103·8	
,, ,,	...	6 p. m.	...	106·4	
,, 10	...	8 a. m.	...	103·2	
,, ,,	...	6 p. m.	...	106·2	
,, 11	...	8 a. m.	...	104·6	
,, ,,	...	6 p. m.	...	106·4	The animal is feeding well and the bowels are in good order.
,, 12	...	8 a. m.	...	105·2	On inspecting the animal this morning, the muzzle is found dry; the gums are congested; ears somewhat drooping; coat slightly staring; dung slightly coated with mucus; feeding but little; eye looks a little dull; a slight tremor not amounting to spasmodic twitchings.
,, ,,	...	6 p. m.	...	106·2	
,, 13	...	8 a. m.	...	105·6	
,, ,,	...	6 p. m.	...	107 2	Muzzle dry; dung soft; animal dull; not feeding.
,, 14	...	8 a. m.	...	105·2	Feeding a little; gums continued congested, and upon them one or two specks of excoriation and aphthous deposits are seen; shivering.
,, ,,	...	6 p, m.	...	106·6	
,, 15	...	8 a. m.	...	103·6	Purging watery stool and mucus; off feed; coat staring; the gums and lower lips are excoriated and aphthous; shivering; vagina much congested and aphthous.
,, 16	...	...	...	...	Died between 2 and 3 a. m. (*Vide* post-mortem examination No. 88.)

CASE No. 45.

Admitted 10th January 1871.—A **heifer,** 2 years old.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871.				*Degrees.*	
January 10	...	...	...	...	This heifer has been kept in the shed of the owner about 30 yards distant to the north-west of the hospital. Yesterday it was observed to be unwell, and is brought for inspection. The gums are much congested, and there is a viscid discharge from the mouth; animal is purging; eats a little, and does not seem very ill.
,, 11	...	...	...	...	No medicine is given; but the owner is told to give only rice gruel and green grass as food; appears better.
,, 14	...	...	...	...	Not purging so much; feeding better and doing well; a very mild case.
,, 16	...	...	...	...	Discharged well.

CASE No. 46.

Admitted 18th January 1871.—A **dog,** 3 years old, brought for experimental purposes.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871. January 18	...	...	...	...	Inoculated at the back of the neck with aphtha taken from the cœcum of a cow which has died of rinderpest.
„ 28	...	...	...	...	No sign of rinderpest has been shown; has fed well, and is in better condition, and as the hospital is about to close, he is discharged.

CASE No. 47.

Admitted 18th January 1871.—A **dog,** 3 months old, brought for experimental purposes.

Day of Month.	Disease.	Hour of examination.	Pulse, rate and character.	Temperature.	Symptoms and Progress.
1871. January 18	...	...	...	...	Inoculated on the head between the ears with aphtha taken from a cow, which has died of rinderpest.
„ 28	...	...	...	...	The puppy has shown no sign of being affected, and the wound has healed. The hospital is now being closed, and the puppy is sent home.

CASE No. 48.

Admitted 19th January 1871.—A **dog,** 18 months old, brought for experimental purposes.

Day of Month.	Disease.	Hour of examination.	Pulse rate and character.	Temperature.	Symptoms and Progress.
1871. January 19	...	...	...	...	Inoculated between the ears on the back of the head with aphtha of a cow which has died of rinderpest.
„ 28	...	...	...	...	The dog remains well, and is sent home, as the hospital is about to close.

APPENDIX No. VII.

POST-MORTEM EXAMINATIONS.

PRECIS OF POST-MORTEM APPEARANCES OBSERVED IN CASES OF RINDERPEST.

It has been an invariable practice throughout this investigation to take advantage of every opportunity offered of making post-mortem examinations. The appearances have been always noted on the spot, and when practicable the fluids and tissues subjected to microscopic scrutiny. A considerable mass of observation has thus been accumulated in the course of the inquiry. The statement on the margin exhibits the number of post-mortem examinations performed, the locality, and the disease. Excluding cases other than rinderpest, there remain 88 records, more or less careful and complete, upon which the following summary has been founded. The detailed records are given below, arranged according to the dates on which the examinations were made.

	No.
Madarkhat (Assam), rinderpest ...	23
Chooadangah (Nuddea), ditto ...	10
Ditto Ditto, castor-oil seed poisoning ...	2
Baloregunge (Hooghly), rinderpest ...	3
Katgora (Burdwan), ditto ...	1
Bood-Bood (Ditto), ditto ...	1
Beershenny (Ditto), ditto ...	1
Humeerpore (Ditto), ditto ...	1
Bunnee (Lucknow) ditto ...	1
Phappoond (Etawah) ditto ...	1
Agra ditto ...	1
Futtehpore ditto ...	1
Secrole (Benares) ditto ...	2
Pandeypore (Benares), hoven ...	1
Belowrie (Shahabad), rinderpest ...	1
Mohuuneah (Shahabad), hoven ...	2
Yakoobpore (Boolundshuhur), rinderpest ...	1
Dhanowra (Haupper) ditto ...	1
Raree (Saharunpore) ditto ...	1
Loodianah ditto ...	1
Sheikoopoorah, pleuro-pneumonia ...	1
Koralie (Montgomery) rinderpest ...	1
Kamalia (Ditto), ditto ...	2
Koka (Ditto), ditto ...	1
Darjeeling foot and mouth disease ..	1
Culna (Burdwan), rinderpest ...	33
TOTAL ...	95

The circumstances under which most of these examinations were performed were anything but favorable for the prosecution of such studies. Except at Madarkhat, Chooadangah; and Culna, the carcasses were opened where they lay—on a field or *bhagar*—and the appearances noted as carefully as possible on the spot. It often occurred that a hot sun, a scorching wind, or the advent of night interfered greatly with the comfort and completeness of the operation, and, in many cases, more or less decomposition had set in before the carcass itself, or the report of death, was brought. In no case were arrangements or appliances available for pathological study of a systematic or elaborate kind, and this want told more with regard to microscopic observation. Modern microscopy demands very perfect instruments of high magnifying power, chemical appliances, and a large sacrifice of time—requires in truth, for any degree of success, the special and exclusive employment of an expert in a laboratory. It will be understood, therefore, that although no pains were spared to make the most of circumstances, and no opportunity lost of subjecting fresh specimens to examination by a good microscope magnifying up to 700 diameters, nothing analytic or experimental could be attempted—nothing, in fact, to compare with the elaborate results presented by Dr. Lionel Beale. The intention was rather to verify recorded appearances, than prosecute systematic research, which, indeed, the migratory character of the Commission and the amount of clerical and general work associated with so large a field of inquiry, and the digestion of so large a mass of evidence, precluded.

Notwithstanding all difficulties and disadvantages, it is believed that this record of pathological appearances is tolerably complete, and will furnish a satisfactory basis of comparison. Specimens of the more remarkable and characteristic appearances have been preserved and placed in the Calcutta Medical College Museum, where they may be studied. A series of water-color drawings was also made at Culna, illustrating some of the features of the disease,

PRECIS. as observed post-mortem, for comparison with the appearances depicted in England and elsewhere. As an opinion as to the nature and alliances of the disease must rest largely upon the morbid changes observed in the tissues of the body after death, no pains have been spared to render this part of the work allotted to the Commission as complete as possible.

In preparing the following summary, the same arrangement which has been adopted in writing the record of each examination has been preserved.

1.—THE GENERAL CONDITION OF THE BODY.

In 68 cases in which the condition of the carcass was noted, it was "very fair," "good," or "very good" in 12; "fair" in 36; and "poor," "very poor," or "extremely emaciated" in 20. It is thus evident that this malady is not one that, in its acute stages, comes under the denomination of wasting diseases. It is probable that an examination of any 68 animals picked indiscriminately out of Indian village cattle would give a similar result. Though animals affected with rinderpest look out of condition, still there is not in the early stages any great loss of flesh, and the omentum and mesentery retain their layers of fat. It is after the acute stage is past, and during the months of tedious recovery, that the wasting is evident. No. 20 is an example of an old case, and the calf (No. 40) examined at Humeerpore another.

2.—SKIN AND VISIBLE MUCOUS MEMBRANES.

The existence of any eruption on the *skin* was exceptional. The coat stared in all cases; in many an excessive development of epidermis and abnormal shedding of epidermic scales was evident; in some instances epidermis and hair had been shed, leaving bare patches (No. 20). This is to be distinguished from the scalded appearance of the hind quarter and thighs, so characteristic of convalescent cases, caused by the continuous wetting of the parts by liquid discharges. In some instances (Nos. 24, 54, 57) a sebaceous exudation was observed on the abdomen, thighs, scrotum, and udder. This exudation was continuous over a patch of surface, or disposed in spots or scabs, and cracked or spontaneously pealed off, leaving a fissure or excoriated surface. On mechanical removal, a livid papillated surface was exposed. The scabs and spots of epidermis thickened and agglutinated by some kind of exudation observed in several living cases on the back and ribs (pp. 106, 390) were the same phenomenon, but the material was harder and scaled off, leaving a dry delicate cicatrix. In no post-mortem examination was a moist eruption—vesicular or pustular—observed, but in two living cases this feature was noticed and described (pp. 227,412). The skin was observed to be congested and patchy in one case (No. 21), a buffalo,—on whose surface such a condition would best show,—but subcutaneous injection was a frequently observed phenomenon, and in one case (No. 25) a general subcutaneous ecchymosis was observed. Œdema was observed in one case—of the extremities (43); but œdema around the eyes was frequently noticed in living subjects (p. 227).

The microscopic examination of a very typical crust removed from the dewlap of No. 20 gave the following result:—The "scab" was circular, shaped like a double convex lens, and continuous marginally with the surrounding epithelium. Centrally it consisted of a dense, hard, amber-colored exudation substance. In its removal it had taken an accurate cast of the surface of the true skin, its under surface showing by reflected light a ridgy papillated aspect, with hair bulbs and casts of glands projecting. Scrapings of the central portion were found to consist of epithelial scales containing bacterium-like particles and masses of nuclear bodies more or less granular, with fragments of mycelial fibres.

The state of the visible mucous membranes—conjunctivæ, nares, mouth, vagina and prepuce—may be noted in describing surface features.

The *conjunctivæ* were noted in many subjects, living and dead, to be congested, and a mucous discharge coursing down the cheeks was an almost universal feature of the disease. Observers have noted the liability of the eyes to become affected, and in some cases disorganized (p. 275), and case No. 20 is an illustration of this, showing the effects of destructive ulceration of the cornea.

The *nares* showed congestion, tumidity, and viscid discharge in all cases. This discharge was frequently examined microscopically, and found to consist of circular or oval cells with a few epithelial scales and much granular and molecular matter, bacteria and leptothrix, and delicate fungal mycelium with spores and sporules.

The *mouth* presented, in all cases examined, a congested mucous membrane and papillæ. This was better observed in the living than the dead subject, and constituted a symptom. The epithelium of the lips, gums and pouch of the cheek was in many cases thickened, and on the gums and dental pad the appearance so frequently noted in these reports as EXCORIATION was often noted. This excoriation might be a simple cracking of the thickened epithelial layer, forming a fissure or an actual denudation of a spindle or oval shape, the denuded surface being raw and deep-red or livid. No ulcerative action seemed to enter into this appearance, which apparently consisted of a parting or shedding of epidermis. A further stage in this morbid condition was the formation of APHTHA,—a soft, cellular, semi-mucous material which supplanted the epithelium of the part and had a tendency to separate, leaving an APHTHOUS ULCER. This condition was observed in all stages, localities, shapes and varieties; as a simple aphthous spot, the same with the aphthous material loose and partly or wholly detached, an ulcer with aphthous floor or border, or both, or a cicatrizing ulcer. These appearances were found on the incisor and molar gums, the upper dental pad, inside of the lips, among the papillæ, and surrounding the sockets of the teeth, &c., &c. It was very seldom that something of the sort could not be detected by careful search,—a spot at the base of a papilla, a ring round a loose tooth, &c., while in some cases, as in No. 22, in which their formation had been watched, well marked aphthous ulcers were observed on the gums or dental pad (No. 8); the corners of the mouth were a frequent site of small ulcers.

In reading the records of cases casually observed during village visits, excoriations and aphthous ulcers in the mouth are often noted, and though the sign was by no means an invariable one, it came to be regarded as a frequent and characteristic sign. The aphthous matter, when examined microscopically, was found to consist of epithelial scales containing still bacterium-like bodies, numerous cell-forms of all sizes and shapes, molecular mycelial matter, granules, bacteria and leptothrix, and crystalline plates. There was always in living subjects more or less viscid or frothy discharge from the mouth.

The *vagina* presented various appearances. There was always more or less discharge and congestion. There was generally observed, on opening the labia, a ring of brighter congestion just within the reflexion of the skin. Aphthous material in some cases constituted a loosely attached covering of the mucous membrane (No. 34), and in other cases definite ulcers with more or less aphthous material covering them were observed (*e. g.* No. 17). Prolapsus was observed in one case (No. 35).

The *prepuce* and surface of the penis presented similar appearances,—congestion, aphthous deposit and ulceration, and discharge.

The *anus* was in some cases congested and prolapsed (No. 35). Some cases were observed in which maggots had been developed at the orifice of the anus and vagina, leading to a sloughy or gangrenous state of these parts.

3.—THE CAVITY OF THE MOUTH.

The *tongue* was generally furred, and beneath its point and along its sides fissures and excoriations were generally observed. The epithelium of the dorsum

Precis

was seldom detached. In some cases of foot and mouth disease, large circular patches of epithelium could be removed very easily.

The hard palate in some cases presented excoriation (Nos. 22, 25). The best example of this feature was, however, seen in a living subject examined at Futtehpore (p. 390, case No. 2), in which the hard palate was one mass of aphthous ulcers and excoriations.

4.—The Pharynx.

Congestion—either uniform, streaky or patchy, bright or livid—ecchymosis in spots (No. 18) or patches (No. 21), tumidity (No. 25), fissures, excoriations and aphthous patches, with or without ulceration, were the appearances noted, in various degrees and combinations, in every case examined. The pharyngeal aspect of the epiglottis was a favorite site of aphthous deposit, which was also frequently noticed upon its edges. The floor of the pharynx, or the space between the circumvallate papillæ and the epiglottis, was always covered with patches of aphtha and bright excoriated surfaces. The submucous exudation in some cases was considerable (No. 43 for instance), and caused a considerable thickening of the membrane and narrowing of the tube. The mucous membrane of the *posterior nares* was found always livid, tumid, and covered with clots of viscid mucus or patches of aphtha.

5.—The Œsophagus.

This tube presented rarely any marked deviation from health. Congestion, sometimes uniform, and sometimes in streaks, is the usual appearance noted, though in some cases a longitudinal fissuring of the lining membrane was observed.

6.—The Peritoneum.

The most usually observed morbid appearance of this membrane was congestion, which assumed a deeper tint according to the severity of disease in the viscera. Thus, the peritoneal coat of the abomasum was always injected, and often very much so; in some cases generally livid. Similarly, when the small or large intestines were much diseased, their peritoneal coating was more or less congested, and Peyer's patches were often indicated by a patch of redness. Sometimes the injection was more particularly confined to the large vessels, and this appearance was best marked between the stomachs, and a gradual shading, owing to extravasation of tinted serum, was observed; in other cases the congestion was more capillary and general. An excess of serum was observed in the cavity in a few cases, and in several spots of ecchymosis were noticed beneath the membrane. This was best seen on the surface of the spleen and liver, where the appearance is noted as subcapsular ecchymosis. Subperitoneal ecchymosis is noted in cases 24, 34, and 68; but the most remarkable and frequently noted phenomenon is that so often referred to in the appended descriptions as "vascular fringes" or "tassel-like fringes." These "fringes" consisted of pendulous vascular outgrowths, processes, or lappets, a few lines long and broad, springing from the surface of the membranes. These, because their presence was so constant, and because they have not hitherto been described, demand a detailed notice. They were most commonly seen on the outer surface of the omentum, and sometimes, on opening the sac of the omentum, on the inner surface as well. They presented at a distance the appearance of bright spots on a pale or slightly congested surface, and when examined more closely their nature as outgrowths was easily discovered. Examined with a low power they were found to consist of loops of dilated and convoluted vessels continuous with the vessels of the membrane. A favorable specimen of omentum, in a sufficiently emaciated subject, presented a series of more or less rectangular areas enclosed by vessels in whose vicinity a layer of fat cells existed. Towards the centre of the area these disappeared, and the membrane became transparent,

the transparent space having a stellate form; from this transparent space the tuft of dilated loops proceeded. Each tuft was found to be accompanied and supported by bands of connective tissue springing from the surface of the membrane, and uniting to form sheaths which surrounded the tortuous and dilated vessels. On treating this membrane with carmine, the walls of the capillaries and the supporting bands presented numerous masses of germinal matter which appeared to be in a state of rapid proliferation. The contrast of the younger connective tissue of these tufts and the formed areolar tissue of the membrane was most marked. In one case (No. 21) these vascular tufts existed also on the parietal peritoneum, and a process of adhesion had commenced between the outgrowths of the parietal and visceral membranes; this was evidently through the *recent* connective tissue above described. In case No. 57 adhesions were found of a more firm description.

7.—The Rumen.

This viscus was in the great majority of cases healthy. The cuticular coat generally separated easily, and by transmitted light congestion of its walls could often be observed. Another frequently noted appearance was subcuticular tinting or exudation, caused by the escape of blood or colored serum from the blood-vessels. In a few cases palpable hæmorrhage into the walls of the organ was seen (cases Nos. 33, 67, and 72). In the last case the hæmorrhage was in patches about the size of a rupee, bulging outwards and inwards both serous and cuticular coats. In three cases (26, 31, and 78) an aphthous deposit was observed consisting of a crusty material more circumscribed, harder, and more adherent than that of mucous membranes. Pendulous tufts were seen on the surface of the organ in one case. The contents of the stomach were, as a rule, found healthy, but occasionally immense numbers of *bots* were found amongst the food.

8.—The Reticulum.

This organ seldom presented any striking morbid feature. Congestion of the walls was occasionally noted, and in one case (No. 31) a deposit of aphtha was observed. *Bots* were also frequently seen in the stomach, the contents of which were otherwise, as a rule, normal.

9.—The Omasum.

The lesions of this organ are more important and interesting. Congestion—either uniform, patchy or streaky—was a very common feature. This was best seen by transmitted light, when the cuticle had been removed. Sometimes the congestion was evidently due to impaction, as in cases 16, 36, 66, and 77, but in most not so, for impaction was not found to be a very frequent occurrence, or observed in a very severe degree. Colored exudation from the vessels of the folds in spots and streaks was occasionally observed. Aphthous deposits on the folds were noted in 15 cases, and associated with perforation in several. The relation of these two features as cause and effect was very patent in many cases, when by removing the aphtha which had penetrated the fold through and through, a penetration remained, or when an unhealed aphthous patch remained on a portion of the margin of a large rent (No. 43). The borders of folds were further in some cases eaten out by the aphthous process. Cases Nos. 24 and 76 were good illustrations of the association of aphthous deposit and perforation. In some cases the rents were very extensive and their margin completely healed (No. 41). In such cases this lesion may have been caused otherwise than by rinderpest, as in some specimens the rents were very long, extending the whole length of the fold. (*Vide* specimens.) The aphthous material was of that brown firmer kind noticed in the rumen, and presented the same microscopic appearances—epithelial scales amongst a quantity of cellular and molecular matter—observed elsewhere. The contents were generally soft, in some cases caked, and in others hard, with the cuticle adhering.

10.—The Abomasum.

Precis. This organ generally presented externally a congested and livid appearance. Its contents were generally liquid or grumous, green or brown in color, and often containing large masses or shreds of mucus or aphtha floating in it. Undigested material was frequently observed in the fluid. The mucous membrane presented in every case congestion and thickening. The congestion varied greatly in aspect, according to the circumstances of the case. The tints of this mucous membrane were very various, as appears from the detailed cases, and sometimes two or more shades of color co-existed. The complexion of the mucous membrane depended much on the age of the disease, on the amount of mucus, and on the degree of extravasation. It varied from a light pink to a dark purple or black, and the darker hues were often scattered over the lighter or duller in dots and patches. It is unnecessary to describe here all the combinations of color which were observed.

The mucous membrane was frequently observed to have a furred appearance, from excessive development of mucus.

Aphthous deposit was a very constant feature, and there were only about 10 cases in which this was not observed. Its disposition was various—in dots and patches, or spread uniformly over a large surface: it was more or less adherent, and could generally be separated by a stream of water, leaving a raw, excoriated, and bright appearance, or an ulcer which involved the mucous membrane to a greater or less depth. Sometimes these ulcers had eaten through the whole mucous membrane, and left nothing but the peritoneal and part of the muscular coats. Such ulcers were common at the pylorus. It was observed that a deposit of aphtha was most common at and around the cardiac and pyloric orifices—the latter most often; but in some cases it was in dots over the whole membrane. Submucous hæmorrhage was a very common occurrence in spots, in patches, and in streaks, and the color of these varied according to the age of the extravasation; in old cases there was an appearance of black pigment, owing to the altered effused blood. Perforation or gangrene of this stomach was not observed in any case, but in one or two instances sphacelated points were seen. The coats of the organ were generally enormously thickened, and the folds often presented an œdematous appearance. The aphtha removed from the abomasum was frequently examined microscopically, and found to present the same appearance as aphtha collected elsewhere, except that there was a greater admixture of foreign matters.

Disease was so invariable and severe in this organ, that it came to be considered the principal seat of the disease.

11.—The Small Intestines.

The *duodenum* generally exhibited a more severe degree of disease than the remaining portion of the small intestine. The condition of that portion of the tube in most cases closely resembled that of the pyloric portion of the stomach,—congestion of various kinds and degrees; submucous hæmorrhage in dots, streaks, or patches; aphthous deposit in spots and patches; thickening of the membrane; contraction of the calibre of the tube, and excoriation or actual ulceration. In some instances the aphtha was so abundant as to form a plug filling up the gut; in other cases it existed as limpet or mushroom-shaped patches springing from the surface by a pedicle apparently proceeding from a gland and easily detached, leaving a bright bare surface. More or less congestion always existed in the small intestine, sometimes dull, at other times vivid, and generally submucous hæmorrhage in points, streaks—longitudinal and transverse—and patches. The mushroom-shaped aphthous patches frequently studded the membrane extensively, and in a few cases aphthous ulceration occurred all throughout the gut in patches, destroying the membrane and nearly perforating the walls (Nos. 42, 43, and 56). In one case only was any approach to gangrene observed, and sphacelated patches were not noticed

in any case. The *solitary glands* were enlarged generally, distended with a ceruminous material, and surrounded with congestion or capped with aphtha. PRECIS.

Peyer's patches were tumid and congested, partially or generally, or individual vesicles were distended with the waxy material above noted, or the patch was partially or wholly covered with aphthous deposit, on whose removal a bright congested surface or an excoriation or excavation was displayed. The contents of the tube were generally scanty and liquid, consisting of mucous material—in some cases tinged or mixed with blood. Pigmentation was observed in the duodenum, and twigs of vessels loaded with black blood were seen in some cases to be the cause of black spots. Spots of extravasation were in most cases seen by examining the surface of the membrane with the microscope by reflected light. In some cases the aphthous material in the duodenum was found to contain a large number of minute round worms, identified as *sclerostoma duodenale*, and their ova were found to exist in great numbers amongst the mucus. Occasionally the diseased condition of the surface, congestion and aphthous deposits increased towards the termination of the ileum. The mesenteric glands were generally more or less congested, and in one instance extravasation had taken place between the layers of the mesentery.

12.—The Large Intestines.

These were always contracted in calibre, more or less congested on their peritoneal aspect, and their coats thickened. The contents were various,—liquid, grumous or mucous material, with more or less admixture of blood and aphtha, or in some cases a mould or plug of bloody aphtha, filling up the cavity and coming away easily when the tube was laid open.

Next to the abomasum, the cœcum presented the most severe and most constant state of disease. The colon participated in slighter degree, and the appearances, as a rule, declined in severity as the rectum was approached, though towards the anus an aggravation was occasionally observed. The pathological features observed were,—congestion of all varieties, submucous hæmorrhage, aphthous deposit and ulceration. The varying degrees of these processes gave rise to the various appearances noted. One of the most characteristic aspects of the cœcum and colon was the zebra-striped appearance and a marbling, owing to the existence of longitudinal stripes of congestion and ecchymosis or pigmentation in one case, or longitudinal and transverse stripes in the other. The congestion of the rectum was generally in longitudinal stripes, and streaks of submucous extravasation were seen in some cases (Nos. 8, 16, &c.)

Examined with the microscope the fæces were found to contain masses of "mucus" and "aphtha," intermixed abundantly with blood, and containing bacteria, vibrios, and leptothrix in great quantity. Nothing specific, as far as form is concerned, was ever observed, though examinations were very frequent and repeated, and cultivation experiments always resulted in a plentiful crop of aspergillus being produced. Infusorial forms appeared earlier in healthy fæces, and fungi later than in morbid fæces; but notwithstanding careful and persevering scrutiny, no specific feature could be detected in morbid fæces, except the abundance of cell-forms and blood-corpuscles, in relation to the débris usually principally composing the excrement.

13.—The Liver and Gall-Bladder.

The liver presented congestion and morbid friability in some cases, subperitoneal ecchymosis occasionally, but nothing characteristic. Fatty degeneration, tubercular deposit and cystic disease were found, but evidently unconnected with the fatal disease. Biliary stasis was sometimes evident. The gall-bladder was always found distended, and the bile most frequently abnormally dark, treacly, coffee-colored or tarry. The mucous membrane of this organ was in many instances found congested generally or in patches, and in several cases covered with aphthous patches.

PRECIS.

Submucous hæmorrhage was noted in one case (No. 21).

In one case (No. 57) the contents of the duodenum were found to have entered the gall-bladder and ducts.

14.—THE SPLEEN.

This organ was generally more or less engorged or friable, but not enlarged. It also presented frequently subcapsular ecchymosis in spots.

15.—THE KIDNEYS AND BLADDER.

The kidneys presented, as a rule, no morbid feature beyond congestion, but the membrane lining their pelvis was found in many cases congested. The mucous membrane of the urinary bladder presented in some cases congestion, submucous hæmorrhage, and aphthous deposit (No. 18, &c.)

16.—THE LARYNX AND TRACHEA.

Congestion, ecchymosis and aphthous deposit, with excoriation or ulceration, were observed in various degrees and combinations in every case. Sometimes the surface was covered with a layer or false membrane of aphthous material, leaving on removal a bright excoriated-looking surface. Aphthous ulcers were more common in the box of the larynx than further down. There was often severe congestion at the bifurcation of the trachea, and occasionally also aphthous deposit or ulceration.

17.—THE PLEURÆ.

These membranes were never observed to contain much fluid. They were generally congested or injected, and in some cases vascular fringes (No. 45) or patches of ecchymosis were observed (Nos. 9, 33). Inflammation and recent adhesion were noticed in a few cases (Nos. 21, 24.)

18.—THE LUNGS.

Congestion was the rule, often so severe that it might be called engorgement. Hepatization, confined to a lobe or two, was observed, but this was exceptional (Nos. 21, 33, 35, and 49). Inflammation seemed to be no constant or essential feature of the disease. Emphysema, subpleural and inter and intra-lobular, was a very commonly observed feature. Collapse of a lobe or part of a lobe was occasionally seen (Nos. 5, 6, 11, 18, &c.)

19.—THE PERICARDIUM.

This membrane was frequently congested, sometimes ecchymosed in spots or patches. Vascular tufts, similar to those observed on the peritoneum, were generally seen on the aorta and pulmonary artery at the base of the heart. Ecchymosis was sometimes observed in spots along the course of the coronary arteries (No. 26, &c.)

Adhesion between the parietal and visceral membranes was noted in case No. 28.

20.—THE HEART.

The cavities generally contained clots, usually of an inky or tarry color. The walls of the cavities and large vessels were in many cases tinged of a mahogany color. Patches of congestion were occasionally noticed, and subserous ecchymosis, especially in the left ventricle, was not an uncommon appearance. (*Vide* cases Nos. 18, 21, 23, 26, 34, &c.) The muscular fibre was in most cases flabby, in some cases fatty, and in two instances the *psorosperms*—so frequently discussed in connection with this disease, but which the general professional opinion has decided have no necessary relation to it—were observed.

In other cases in which they were searched for they were not found. They presented exactly the same appearances as described by Dr. Lionel Beale and others, and need not be here further described. PRECIS.

21.—THE BLOOD.

Was examined in many instances immediately after withdrawal from the living animal. The red corpuscles were always found more or less misshapen, and a quantity of molecular and cellular material, frequently clustering and massing and acquiring a vivid tint from an ammoniacal solution of carmine was invariably observed. In mass the blood looked black or even tarry, and there generally appeared to be a tendency to a transudation of tinted serum, which shaded off the course of large veins and arteries. In some instances the blood contained in submucous loops of dilated small vessels was observed to be perfectly black, and the pigmented appearance of membranes, more particularly the cœcum and colon, was obviously owing to decomposed and altered extravasated blood.

22.—THE NERVOUS CENTRES.

No disease of any moment was found in the cases in which these organs were examined. Meningeal congestion, punctation of white matter, effusion of serum, and engorgement of the choroid plexus were the features most commonly observed. Vascular fringes were observed in some cases beneath the cerebellum.

24.—THE UTERUS AND ITS CONTENTS.

The internal surface of the uterus was observed in some cases to be congested. In four cases a fœtus in utero was found. In one (No. 11) no indications of disease were observed: in the others (Nos. 38, 48, and 78) unmistakable signs of infection by the disease from which the dam had died were noticed. In No. 78 the amnion was found covered with spots of aphthous growth. This specimen has been preserved and figured.

25.—THE UDDER AND MILK.

The surface of the udder has been already remarked upon. The gland itself never became the subject of particular observation. Milk was examined on several occasions. The globules exhibited a tendency to coalesce into large masses, and there was always a large quantity of molecular matter which existed as separate, clearly outlined, delicate globules exhibiting active molecular movement, or massed into groups or strung into filaments. Much granular matter existed in masses which were more irregular in conformation, and acquired a bright carmine tinting from the ammoniacal solution. The milk globules seemed occasionally to be massed together by means of this material.

26.—CONCLUSION.

From the foregoing it is evident that no specific form, feature, or morbid alteration was discovered which could be pointedly stated as *the* peculiarity of this disease; but the group of morbid changes above described, and most of which were found to be very constant, characterizes it with sufficient exactitude for comparison with other morbid states and descriptions of them; and it will be very apparent to any one who takes the trouble to study these pathological records and those of the English cattle plague that they are, as far as morbid anatomy goes, identical. Every one of the appearances figured in the Appendices to the Report of the English Cattle Plague Commission has been identified, and many of these plates would illustrate the descriptions given below. What the essential nature of the disease is, it would be a presumption, from the imperfect pathological inquiry made, to surmise. Whatever the germ or poison may be, there can be no doubt that it induces a degeneracy of nutrition manifested by an excessive growth of low organic forms

PRECIS.

substituting complicated tissues of higher organization; and it is equally manifest that this process finds in the mucous membranes the most appropriate field or substratum. To speculate on what the cause of the disease is, or where it enters, works, and escapes, were to undertake a profitless discussion.

The inquiry has been too hurried and general to admit of such refinements, which must await the exclusive study of a skilled microscopist with opportunities and proper appliances.

POST-MORTEM EXAMINATIONS.

No. 1.

Bullock, ten days ill, examined at Madarkhat 24th January 1870 *at* 5 *p. m. Dead* 18 *hours.—Condition, fair.*

Cutaneous system. No eruption upon the *skin;* slight subcutaneous congestion inside the thighs; *conjunctiva* congested.

Digestive system. The *lips, palate,* and *gums* exhibit a thickening of the epithelial layer, and commencement of desquamation; the surface of the *tongue* is in the same condition; the cuticular layer is easily detached, leaving a deeply congested surface; at the root there are patches of congestion; in one or two places there is an approach to ulcer; on the right side of the inner portion of the *epiglottis* there is an aphthous ulcer, surrounding which the mucous membrane is deeply congested; the whole mucous membrane of the *pharynx* is more or less congested; the *rumen* contains a large quantity of food and many parasites (bots); the *reticulum* contains a large quantity of pultaceous food; the *omasum* is slightly impacted, but the food is not hard; the mucous membrane of the *abomasum* is deeply congested throughout; there are several patches of submucous ecchymosis on the folds; some portions of the mucous membrane have a deep claret color; two distinct sphacelated patches, one in process of healing, are seen; from the surface of the other an aphthous pellicle was removed; the orifices of the gastric pellicle are marked by spots of congestion; the *duodenum* is very slightly congested; the *jejunum* is in a similar condition; the *ileum* is congested throughout; the *solitary glands* are enlarged with surrounding congestion; *Peyer's patches* present a vivid claret color, most of them being covered with a dark-brown aphthous pellicle; small ulcers are apparent on the surface of these patches; the termination of the *ileum* over a space of three inches is one mass of aphtha; congestion of the deepest dye, and ulceration on removing the aphtha; the *cœcum* is much contracted, walls thickened, and mucous membrane congested; the *colon* is deeply congested, in some places showing a patchy appearance of dark and light color; the color in some places is very dark; the contents resemble a mixture of dark blood and water; one or two patches of aphthous pellicle are observed; *liver* slightly congested; *gall-bladder* full; *spleen* slightly engorged.

Respiratory system. Lower end of *windpipe* congested; both *lungs* congested throughout.

Circulatory system. *Pericardium* slightly congested; *left ventricle* contained about an ounce of darkish blood: no clots; lining membrane of *right ventricle* shows patches of slight congestion.

Brain not examined.

No. 2.

Cow (4 *years*) *examined at Madarkhat* 25*th January* 1870 *at* 11-30 *a. m.—Condition, poor.*

Cutaneous system. No eruption upon the *skin.*

Digestive system. Inside the lower *lip* there is a small patch of ecchymosis; there is congestion of the *gums;* the *soft palate* is congested: desquamation of epithelium has taken place; on either side of the root of the *tongue* the mucous membrane is highly congested, and desquamation has taken place; the *rumen* contains a large quantity of soft food and a great number of bots; lining membrane healthy; the *reticulum* contains soft food and bots; lining membrane free of disease; the *omasum* is somewhat impacted, but the food is soft; lining membrane quite healthy; the *abomasum* is filled with soft semi-liquid food; at the cardiac portion a large aphthous patch is found, about 2 inches broad and long; two other connected patches occur at about 1½ inch distance; the pyloric enlargement of the stomach is found highly congested, its mucous membrane presenting several dark livid patches between the longitudinal folds of the membrane. The whole of the mucous membrane of this stomach is highly congested and patchy; there are also aphthous dots here and there; some partially detached sloughs are seen, which are easily removed by a stream of water: others are more firmly attached; some of these extend into the orifices of the mucous pellicles; one sphacelated patch is also found close to the pyloric orifice; *duodenum* thickened and congested; in the *jejunum* there are patches of organized lymph, and other aphthous patches

floating in the rice-gruel-like liquid contents of the bowel, and here and there well marked spots of deep congestion, the whole of the mucous membrane being highly congested; some of these fragments of organized lymph have the appearance of miniature mushrooms, attached by a short pellicle to the mucous membrane; *Peyer's patches* are swollen, and show spots of congestion; in the middle portion of the *ileum* the mucous membrane is found to be comparatively healthy, but still *Peyer's patches* have the spotty congestion already described, and in some wax-like material of a yellowish-green color is found, in masses of the size of a pin's head to a pea; the lining membrane of the *cæcum* is of a dark claret color: contents small in quantity and of a dark-red color; there is abundant submucous ecchymosis; *liver* congested; *gall-bladder* very full of dark treacle-colored bile.

The ridge of the *posterior nares* shows an aphthous slough, and the mucous membrane of the *posterior nares* is highly congested throughout, and slightly ulcerated; both sides of the *epiglottis* highly congested, and at its foot there are large patches of aphtha, on the removal of which a deep, livid, ulcerated surface is disclosed; the *larynx* and *trachea* are congested, the congestion gradually becoming less towards the bifurcation of the trachea; *lungs* healthy. Respiratory system.

The right ventricle of the *heart* contains a quantity of inky clot; lining membrane of the right auricle and ventricle, especially the former,, deeply tinted; the tinting extends into the *venæ cavæ*; inky clot in both left cavities; lining membrane healthy. Circulatory system.

Mucous membrane of *labia vaginæ* deeply congested. Reproductive system.

Brain not examined.

No. 3.

Milch cow (4 *years*), *examined at Madarkhat* 26*th January* 1870 *at* 12 *noon. Dead* 14 *hours.*—*Condition, fair.*

[This animal was brought by the Police at 6 p.m. of the 25th, and died at 10 p.m. It presented the following symptoms, namely, ears drooping; coat staring; passing liquid fæces containing mucus and blood; great prostration; can hardly walk; no eruption; slight discharge from nose, eyes, and mouth; stupor; pulse fluttering, small, and rapid; udder giving a little milk.]

No eruption upon the *skin; conjunctiva* slightly congested; *udder* contained a small quantity of milk, which was removed for experimental purposes. Cutaneous system.

Mucous membrane of *lower lip* congested; a few excoriations are seen on the gums around the teeth and on the inside of the *upper lip;* the borders and under surface of the point of the *tongue* are excoriated, and the latter in an aphthous condition and cracked in many places; on removing the aphtha the surface is left raw and congested (the aphtha removed is kept for inoculation); the upper surface of the root of the tongue is in an aphthous condition; *palate* healthy; entire *pharynx* intensely congested and covered with aphtha; fissures and excoriations are seen here and there; the upper portion of the *œsophagus* is in the same condition; the *rumen* contains a large quantity of soft food and many bots; lining membrane healthy; cuticle easily removed; the *reticulum* contains soft food; lining membrane healthy; cuticle easily removed. The *omasum* is slightly impacted, but its contents are soft; cuticle easily removed; folds universally congested; the *abomasum* contains liquid food; mucous membrane highly congested all over; a dense aphthous patch, 4 inches by 6 inches, near the cardiac orifice; the aphthous pellicle is easily removed, and the surface beneath it seen to be deeply congested, and of a magenta color; folds highly congested and of a more or less livid color; a large ulcerated patch, measuring 4 inches by 1½, is seen close to the pyloric orifice, edges rugged and irregular; coats of the stomach very much thickened, the mucous membrane being three times as thick as usual; near the pylorus, on the ridges of the folds, are seen black striated patches of pigment, also other unstriated black patches; in the neighbourhood of this the mucous membrane has a furred or mammillated appearance; several aphthous patches of various sizes occur in the *duodenum* within 2 inches of the pylorus; smaller spots are seen at a greater distance; on removing the aphtha, a rough, highly congested, depressed surface is disclosed, margins somewhat serrated; the mucous membrane is marked by alternate stripes of a fawn color and dark congestion, the latter studded over with points of pigment deposit; there is also a granular deposit of pigment all over the membrane, which is about three times the natural thickness; on scraping the mucus, which is extremely abundant and viscid, off the membrane, the black points are seen to be capillary twigs containing altered blood; the remainder of the duodenum presents similar features, but not so well marked; mucous membrane of *jejunum* mottled with pigment; *Peyer's patches* show numerous dots of deep congestion, the glands being more or less enlarged; several patches exhibit more or less ulceration; *solitary glands* enlarged with surrounding congestion; some throw out masses of cheesy material, on the removal of which an ulcerated aperture is observed. The individual glands constituting *Peyer's patches* are sometimes seen in the same condition; the mucous membrane of the *ileum* is generally healthy; there is, however, ramiform congestion and a general livid hue; the contents of this gut are liquid, of a greenish-brown color; *cæcum* striped with pigmentary striæ, which are continued into the *colon*, whose mucous membrane is much thickened, and exhibits patches and Digestive system.

congestion; pellicles enlarged; orifices congested; the folds of the *colon* exhibited longitudinal lines of vivid congestion; contents liquid and very scanty; *liver* congested, soft and friable in many places; *gall-bladder* contained a small quantity of light colored bile; *spleen* somewhat engorged and friable; *kidneys* congested; *peritoneum* contained more serum than usual.

Reproductive system. Mucous membrane of *labia vaginæ* congested, and at the junction with the skin, of a dark claret color; patches of congestion observed about 5 inches from the orifice.

Respiratory system. *Posterior nares* highly congested, and in some parts covered with patches; shreds of flaky aphtha occur on the mucous membrane of the *larynx*, partially detached; on removing these, the surface is deep-red and raw; the mucous membrane of the *trachea* is congested in longitudinal patches; *lungs* healthy.

Circulatory system. *Pericardium* healthy; lining membrane of *right ventricle* deeply stained; wall soft and friable; same appearance of staining in the *venæ cavæ* and *auricle;* left cavities healthy.

Nervous system. *Dura mater* healthy; no fluid in cavity of arachnoid; *pia mater* congested; no fluid in lateral ventricles; *choroid plexus* engorged; brain healthy; white substance a little punctated; *cerebellum* and *medulla oblongata*, &c., healthy.

No. 4.

Cow 5 *years, examined at Madarkhat* 27*th January* 1870 *at* 11 *a. m.—Condition, very fair.*

Cutaneous system. No eruption on the *skin;* abundant discharge from the *nose; conjunctiva* congested; general subcutaneous congestion.

Digestive system. Papillæ of *mouth* congested; excoriation of lower gum; mucous membrane of gums congested; excoriated ulcers on margin of *hard palate;* general congestion of *soft palate* and *pharynx;* aphtha on former; congestion and excoriations towards the root of the *tongue;* peritoneal coat of *reticulum* congested; *abomasum* highly congested; aphtha at cardiac orifice, and a little at pylorus; *duodenum* deeply congested, aphthous patches; *small intestines* contained a small quantity of liquid material; *mesenteric glands* congested; *Peyer's patches* intensely congested, and covered with aphthous spots, ulcerated beneath; *solitary glands* enlarged, containing cheesy or waxy-looking matter; *cæcum* exhibits patches of congestion and pigmented striæ; *colon* and *rectum* present similar appearances; *liver* highly congested; *gall-bladder* full of dark bile treacle-like in color; *spleen* highly congested; *kidneys* congested, more especially the left.

Reproductive system. *Vagina* highly congested; borders of the *labia* of a dark livid color; slight aphtha within an inch of the labia; the greater portion of the mucous membrane of the vagina is congested; *uterus* shows congestion in patches.

Respiratory system. There is an aphthous pellicle on the ridge of the *posterior nares;* the *larynx* shows general congestion, and an aphthous condition; in the *trachea* there are aphthous patches, and congestion all down the tube; the *lungs* are slightly congested; *pericardium* healthy; lining membrane of both auricles and ventricles of *heart* slightly congested here and there.

Nervous system. *Dura mater* slightly congested; *pia mater* much congested; slight extravasation between the convolutions; no effusion, either sub-arachnoid or intra-ventricular. *Choroid plexus* engorged; *cerebrum* healthy, somewhat punctated; *cerebellum* and *medulla oblongata* healthy.

No. 5.

Bullock 5 *years, examined at Madarkhat* 27*th January* 1870.—*Condition, fair.*

Cutaneous system. No eruption of any sort on *skin.*

Digestive system. Lower *gum* congested; excoriated ulcers below teeth on both sides; *tongue* furred and fissured; excoriated ulcers and aphtha on under surface of point; *palate* healthy; a few excoriations and congested papillæ; *pharynx* congested throughout; shows small aphthous patches; on opening the abdominal cavity the surface of the *omentum* is seen to be studded over with patches of vascular tassel-like shreds or fringes, which project from the outer surface of the membrane, and vary in size from one-eighth to a quarter of an inch; *rumen* healthy; contains as usual numerous bots and soft food; *reticulum* healthy; also contains many bots; *omasum* healthy: mucous membrane of *abomasum* intensely congested; sub-mucous hæmorrhage; aphtha at cardiac orifice; black striæ at pylorus; aphthous patches in *duodenum*, this bowel presents a black striated appearance; *Peyer's patches* covered with dense aphtha; the *small intestine* is ulcerated at one point down to the peritoneal coat; *solitary glands* enlarged, containing waxy matter; *cæcum* empty; the whole mucous membrane is covered with dark raspberry-colored blood in thick layers; there is also submucous extravasation; *colon*, within a foot of the *ileum*, filled with layers of thick blood and aphtha, which can be with ease drawn out as a long piece, and presents an appearance

of having been moulded in and by the intestine; in some parts of these clots organization has commenced; *rectum* contains a quantity of yellow mucus, and is covered with patches of congestion; *liver* congested; *gall-bladder* full; *spleen* congested; *kidneys*, both congested; *mesenteric glands* somewhat enlarged and congested.

Mucous membrane of *posterior nares* tumid and congested; *larynx* extremely congested; tumid aphthous patches on under surface of *epiglottis; trachea* congested in patches; *lungs* congested throughout; upper lobe of right lung collapsed; both lungs exhibit interlobular emphysema. Respiratory system.

Patches of congestion in the left ventricle of the *heart*. Circulatory system.

Membranes of *brain* a little congested; substance healthy. Nervous system.

No. 6.

Cow (aged), examined at Madarkhat 27th January 1870.—*Condition, poor.*

No eruption on the *skin:* no subcutaneous injection; *conjunctiva* congested. Cutaneous system.

Hard palate excoriated: posterior portion congested: aphtha and excoriations on *soft palate;* the *omentum* presents patches of vascular tassel-like fringes, as described in No. 5; *rumen* healthy, as also *reticulum* and *omasum,* which contain soft food; the *abomasum* contains soft liquid food: nearly the whole of the mucous membrane of the organ covered with aphthous patches: traces of ulceration are here and there observed: the layer of aphtha is very dense at the pylorus, and ulceration has taken place here: membrane congested and thickened throughout; the *duodenum* is covered with red patches of congestion and aphtha; there is general congestion of the *small intestines; Peyer's patches* are congested and aphthous; *cæcum* contains a very small quantity of solid food: the mucous membrane is patchy; the *large intestine* is generally congested; *liver* healthy; *spleen* soft and congested; *kidneys* slightly congested. Digestive system.

There is slight congestion on each side of the *epiglottis* and in the *larynx; lungs* much congested; upper lobe of *right lung* collapsed. Respiratory system.

In the right ventricle of the *heart* the lining membrane shows one or two patches of congestion. Circulatory system.

Membranes very slightly congested; *brain* healthy; a little serum in lateral ventricles; *choroid plexus* engorged. Nervous system.

No. 7.

Cow-calf (8 *months*), *examined at Madarkhat 28th January* 1870 *at* 11-25 *a. m.—Dead* 10 *hours.*

There is no eruption on the *skin;* there is congestion within the *labia vaginæ.* Cutaneous system.

Gums healthy; *buccal papillæ* congested at roots; there are excoriations and aphthous patches on *hard palate;* the root of the *tongue* is congested, and there is here one aphthous spot; *pharynx* congested, and the membrane shows raised tumid patches; *œsophagus* is congested and striated; *rumen* healthy: contains myriads of bots; *reticulum* also healthy: contains many bots; *omasum* healthy: contents soft; the *abomasum* contains liquid food; the mucous membrane is highly congested, and many dark claret-colored patches are seen; there is an aphthous deposit all round the cardiac orifice, and also around the pylorus; on removing the aphtha, the mucous membrane is found to be particularly dark in color; the mucous membrane of the *duodenum* is much congested, and dark claret-colored patches are seen on the membrane, which is raised and much thickened from submucous hæmorrhage: the color of the membrane becomes gradually lighter as we proceed, but still slate-colored longitudinal striæ are found; *Peyer's patches* highly congested: some portions of a patch are simply swollen and of a light color: thers are much darker, and the remainder covered with aphtha: longitudinal and transversee solate-colored striæ are seen throughout the intestine; the contents of the *small intestine* ar scanty; *solitary glands* enlarged; tumid red spots on some portions of the *ileum; cœcum* constricted; mucous membrane deeply congested, and very dark in color at its fluid extremity: one spot is particularly black, and contains submucous decomposed blood; there is aphthous deposit at the blind end and upper part of the cœcum, the intermediate portion being free of deposit; the *colon* is in the same state as the cœcum; the *rectum* is slightly congested, and shows red spots; *liver* healthy; *gall-bladder* nearly empty: the mucous membrane is covered with aphthous spots and congested; flukes are found in the biliary ducts, and the membrane of the duct is tumid and gritty; *spleen* congested; pyramids of *kidneys* congested. Digestive system.

The mucous membrane of the *posterior nares* is tumid and congested; the *larynx* shows deep congestion in patches, and the mucous membrane is tumid and covered with aphthous spots; there is general congestion of the *trachea; lungs* congested throughout; there is a cyst in the left lung posteriorly. Respiratory system.

Circulatory system. *Pericardium* generally healthy: at the reflection of the membrane anteriorly there are some vascular floccules; cavities of *heart* contain a small quantity of blood; lining membrane healthy.

Nervous system. *Dura mater* healthy; *pia mater* much congested: the lateral ventricles contain a more than usual amount of fluid; *choroid plexus* engorged; substance of the *brain* healthy.

No. 8.

Bullock (aged 4 years), examined at Madarkhat on the 28th January 1870.—Died same morning. —Condition, fair.

Cutaneous system. There is no eruption on the *skin; prepuce* highly congested; the mucous membrane is in a similar condition to that observed in the *vagina* in this disease; there is also an aphthous lining; the surface of the *penis* is congested.

Digestive system. The *gums* are congested and excoriated: there is an excoriated ulcer on the upper dental pad; there are excoriated ulcers on the *hard palate* posteriorly; there are also excoriations and aphthous patches on the *soft palate*; there is an aphthous deposit and excoriations on the *tongue* below the point and at the root: the organ is much furred; *pharynx* congested; tumid patches and spots of aphtha are seen; *œsophagus* healthy; *tonsils* congested; the *omentum* shows spots of tassel-like fringes; *rumen* contained dry green grass, healthy; *reticulum* healthy, contained bots; *omasum* slightly impacted, healthy; *abomasum* contains green liquid food; there is an aphthous deposit at the cardiac orifice and at the pylorus; the mucous membrane is highly congested, the folds of a livid color; the *duodenum* is highly congested, and in its liquid contents large pieces of aphtha are found floating; the *jejunum* is in the same condition; *Peyer's patches* are congested, and have an aphthous deposit on them; *solitary glands* enlarged, emitting a waxy-green matter; the contents of the *small intestine* are liquid and scanty; the *cœcum* contains nothing but very dark bloody mucus; the mucous membrane is of a very dark raspberry color, with inky streaks running in the direction of the tube; the *colon* is in the same condition as the cœcum; flakes of aphtha are seen floating in the dark bloody mucous contents, and some portions of the large bowel are more healthy, and do not exhibit the appearances above described; the *rectum* is congested; the mucous membrane of the last foot and a half of the gut is very much thickened, tumid, and exhibits longitudinal streaks of submucous extravasation; *liver* slightly congested; *gall-bladder* distended with light colored bile; mucous membrane congested in patches; *spleen* healthy; *kidneys* very slightly congested, more particularly the pyramids.

Respiratory system. The *larynx* is congested, and shows aphthous spots and patches, also tumid spots and patches; *trachea* congested in longitudinal patches, contains a quantity of inspissated mucus; *pleuræ* slightly congested; *lungs* congested throughout.

Circulatory system. *Pericardium* shows vascular fringes or floccules at its reflection; the right cavities of the *heart* are filled with dark clots and blood: the lining membrane of the cavities is healthy.

Nervous system. The *pia mater* is congested; the lateral ventricles are somewhat distended with serum; substance of *brain* healthy; white matter slightly punctated.

No. 9.

Bullock (aged), examined at Madarkhat 28th January 1870—Condition, fair.

Cutaneous system. No eruption on the *skin;* the *prepuce* is highly congested, and its mucous membrane covered with aphthous patches; surface of *penis* also highly congested.

Digestive system. The lower *gum* is congested and slightly aphthous; the *buccal papillæ* are congested at their base; there are excoriations on the *palate;* the soft palate shows tumid elevations of the mucous membrane and excoriations; the *tongue* is furred; there are excoriations below the tip and at the root, and an aphthous condition of the former; the *pharynx* is tumid and congested; the *œsophagus* is more slightly congested; the *omentum* shows the same tassel-like fringes noted in previous cases: that surrounding the intestines exhibits these fringes more markedly; the peritoneal surface of the *rumen* is congested, and shows pendulous tufts; along the lower border of the *reticulum* there is a long streak of congestion and sub-peritoneal ecchymosis, and there are dots of congestion all over the peritoneal covering of the organ; the cuticular lining is also congested; the peritoneal coat of the *omasum* is here and there congested; some of the folds are congested in patches, the attached portion being more congested than the free border; all these stomachs contain a large quantity of food, evidently composed of green grass; the *abomasum* is intensely congested, and its folds of a livid color; there is submucous hæmorrhage on the folds; no aphthous deposits are apparent; the *duodenum* is congested and covered with scarlet spots, to which aphthous deposits are attached; some of these are firmly attached, and on removing them ulcers are found; the mucous membrane of the small intestine is congested throughout, and here and there more or

less thickened; the *cæcum* is not constricted, and contains the usual amount of liquid matter; there are spots of congestion on its mucous surface; the *colon* and *rectum* are in the same condition; the surface of the *liver* presents fawn-colored patches; the substance is congested and patchy; the organ is enlarged; the *gall-bladder* is distended with light colored bile; the mucous membrane is a little congested; the superficial vessels of the *spleen* are congested; the substance is soft and friable; the *kidneys* are greatly congested.

The mucous membrane of the *nares* is tumid and highly congested; the *larynx* shows aphtha, tumid spots, and general swelling and lividity; the mucous membrane of the trachea is generally congested; there are patches of ecchymosis on the *pleuræ*; the lungs are congested and exhibit interlobular emphysema throughout; the trachea is deeply congested at its bifurcation. Respiratory system.

The *pericardium* is congested in patches; the right cavities contain tarry clots; the lining membrane of the auricle is of a mahogany color, also of the ventricle, in patches; the left ventricle contains tarry blood and clots; the lining membrane is healthy. Circulatory system.

Dura mater healthy; *pia mater* very slightly congested; *choroid plexus* engorged; substance of brain engorged. Nervous system.

No. 10.

Bull-calf (*No.* 13 *hospital case*), *examined at Madarkhat* 28*th January* 1870.—*Condition, fair.*

No eruption on the *skin*; mucous membrane of *prepuce* deeply congested. Cutaneous system.

Lower *gums* congested; *palate* covered with aphtha; *tongue* furred; root of tongue aphthous; *pharynx* deeply congested, and covered with aphthous patches; *œsophagus* congested; the *rumen*, *reticulum*, and *omasum* contained the usual amount and kind of food; lining membrane healthy; the mucous membrane of the *abomasum* is of a claret color, and the folds present a livid tint; several patches of aphtha occurred at the pylorus and elsewhere; the mucous membrane of the *duodenum* is of a livid color; the *small intestines* contain scanty fluid matter; mucous membrane throughout congested and livid; *Peyer's patches* enlarged and aphthous; flukes of aphtha are seen floating among the contents of the intestine; *solitary glands* enlarged; *cæcum* constricted; mucous membrane much thickened; there is submucous ecchymosis and longitudinal striæ; *colon* and *rectum* in the same state; *liver* congested; *gall-bladder* very much distended; *spleen* congested; *kidneys* slightly congested. Digestive system.

Larynx congested and covered with aphthous patches; *trachea* exhibits stripes of congestion; *lungs* congested. Respiratory system.

Upper portion of *pericardium* congested; *heart* healthy. Circulatory system.

Dura mater healthy; *pia mater* congested; *choroid plexus* engorged; substance of *brain* healthy. Nervous system.

No. 11.

Cow in calf (3 *years old*), *examined at Madarkhat* 29*th January* 1870.—*No.* 11 *in Hospital Register—Condition, fair.*

No eruption on the *skin*; *vagina* congested; border of orifice livid. Cutaneous system.

Lower *gum* congested, slightly excoriated; *buccal papillæ* congested on both sides; *hard palate* congested; aphtha and excoriations posteriorly; *tongue* furred; aphtha and excoriations below tip or at root; *pharynx* congested; excoriations at the commencement of the *œsophagus*; *rumen* healthy; *reticulum* healthy, contains bots; *omasum* healthy, contains softish food; *abomasum* congested; patches of aphtha, on removing which the mucous membrane presents a dark claret color; folds present a livid tint; there is at the cardiac orifice a dense layer of aphtha which is very adherent; in the *duodenum*, close to the pyloric orifice of the stomach, claret-colored patches are seen; there is aphtha seen also upon the mucous membrane: the *small intestines* are slightly congested; numerous spots of deeper congestion and aphtha are seen; the *solitary glands* are enlarged, and *Peyer's patches* are swollen, and very dark in color; the *cæcum* is contracted, and contains a small quantity of liquid material; the mucous membrane is deeply congested, mottled, and thickened; the surface is covered with a layer of yellow viscid mucus, and the mottling is composed of claret-colored patches, dark striæ and black spots; *colon* in the same state; the border of the ileo-cæcal valve is of a black tint; the *rectum* presents the same appearance as the *colon*, the color not being so dark; *gall-bladder* full of bile of a brown color, membrane congested throughout and covered with aphthous spots; biliary ducts filled with flukes; substance of *liver* slightly fatty and congested; *kidneys* congested, more particularly the pyramids; *spleen* healthy. Digestive system.

Posterior nares tumid, aphthous, and congested; mucous membrane of *larynx* congested and spotted with aphtha; lining membrane of trachea congested in rings; *pleuræ* very slightly congested; *lungs* congested throughout; upper lobe of right lung collapsed. Respiratory system.

Circulatory system. *Pericardium* slightly congested; patches of congestion at the reflection of the membrane; right cavities contained dark blood, no clot; lining membrane healthy; left cavity in the same condition.

Reproductive system. The *uterus* contained a calf, which was carefully examined and found healthy.

Nervous system. *Brain* not examined.

No. 12.

Bullock (4 *years*), *examined at Madarkhat* 29*th January* 1870.—*No.* 8 *in Hospital Register.*—*Condition, fair.*

Cutaneous system. No eruption on *skin*; mucous membrane of *prepuce* congested.

Digestive system. There are excoriations of the mucous membrane at the root of the *tongue;* the *pharynx* is highly congested and aphthous; *rumen* healthy; *reticulum* shows a deep line of congestion of lower border on peritoneal surface; *omasum* healthy; the three stomachs contain the usual amount of green grass; *abomasum* highly congested; there is dense aphtha round cardiac orifice; folds of a claret color; there is aphtha at the pylorus, but not to the same extent as at cardiac orifice; mucous membrane of *duodenum* tumid, and covered with patches of aphtha; *jejunum* in a similar state; *ileum* slightly congested; *solitary glands* swollen; *Peyer's patches* also swollen; contents scanty; spots of congestion all over the membrane; portions of the mucous membrane of the *cæcum* are deeply congested, showing dark-red and black spots of submucous hæmorrhage; bowel much constricted, containing a small quantity of yellow viscid matter; borders of *ileo-cæcal* valve of a dark inky color from submucous extravasation; *colon* in a similar condition; *rectum* slightly congested, containing viscid yellow mucus and a small quantity of waxy matter; *liver* healthy; *gall-bladder* full of light colored bile; *kidneys* slightly congested; *spleen* healthy.

Respiratory system. *Posterior nares* highly congested, covered with aphtha; *epiglottis* deeply congested; *larynx* and *trachea* also congested, and showing a small quantity of aphthous deposit; *lungs* exhibit interlobular emphysema.

Circulatory system. There is slight congestion of *pericardium,* and patches of congestion in *left ventricle.*

Nervous system. *Brain* not examined.

No. 13.

Bull-calf, examined at Madarkhat 29*th January* 1870.—*No.* 13 *in Hospital Register.*—*Condition, fair.*

Cutaneous system. No eruption on *skin; prepuce* deeply congested.

Digestive system. *Palate* excoriated and aphthous; abdominal cavity contained an unusual amount of serum; *rumen* and *reticulum* healthy; contents of *omasum* rather hard; cuticular lining healthy; *abomasum* not uniformly congested; two or three patches of congestion with much aphtha at cardiac orifice; folds livid; pylorus highly congested and aphthous; *duodenum* shows grey and black streaks of submucous hæmorrhage running along gut; mucous membrane thickened; several patches of aphtha are seen; *jejunum* also highly congested; *ileum* exhibits faint traces of congestion; *small intestines* contained viscid yellow mucus; *solitary glands* tumid; *Peyer's patches* slightly congested; *cæcum* constricted, contains a little slimy matter; membrane slightly congested; *colon* and *rectum* in the same condition; *kidneys* healthy; *liver* healthy; *gall-bladder* healthy.

Respiratory system. *Posterior nares* highly congested, and covered with dense aphtha; the entire *larynx* is covered with an immense quantity of aphtha; *lungs* congested.

Circulatory system. *Pericardium* congested; *heart* healthy.

Nervous system. *Brain* not examined.

No. 14.

Bullock (*aged*), *examined at Madarkhat* 29*th January* 1870.—*No.* 19 *in Hospital Register.*—*Condition, fair.*

Cutaneous system. No eruption on *skin; prepuce* congested.

Digestive system. Base of *tongue* congested and excoriated; *soft palate* in a similar condition; *rumen* healthy; deep streaks of congestion along lower border of *reticulum,* which is in other respects healthy; *omasum* healthy; the three stomachs contain the usual amount of food; mucous membrane of *abomasum* claret-colored; folds livid; aphthous deposit all round cardiac orifice, on the removal of which very dark spots are seen; a bleeding surface all but ulcerated; *pylorus* in the same condition; the *duodenum* has the same appearance as the abomasum; *jejunum* and *ileum* congested, former more highly; *solitary glands* tumid; *Peyer's patches* deeply congested; whole mucous surface studded with red spots of congestion; one solitary gland, deeply congested,

showed a large clot of blood about the size of a small pea choking up the orifice of the gland, and not easily removed; *cæcum* much constricted, about the size of the *œsophagus*, containing only bloody mucus; mucous membrane highly congested; numerous aphthous deposits are seen, and the membrane is covered with claret-colored patches; *colon* in the same condition, but not so highly constricted; *rectum* slightly congested; all the intestines contained a small amount of viscid mucus; in some places this mucus is more or less bloody, and mixed with flukes of aphtha; *liver* of a clay color (fatty degeneration); *gall-bladder* much distended with inky bile; *kidneys* congested.

Aphthous deposit in both *posterior nares*, whose lining membrane is tumid; *larynx* and *pharynx* congested; long streaks of congestion in the windpipe; *costal pleura* congested; *lungs* congested, especially the right. Respiratory system.

Brain not examined. Nervous system.

No. 15.

Bullock, examined at Madarkhat 29th January 1870.—*Hospital Case No.* 10.—*Condition, fair.*

No eruption on the *skin; prepuce* highly congested. Cutaneous system.

Omasum slightly impacted; folds slightly congested; *abomasum* of a dark claret color; folds very livid; aphthous deposit around cardiac orifice and pylorus; *duodenum* in a similar condition, patches of aphtha all along its course; *cæcum* full of bloody mucus, in the same condition as that of case No. 14; aphthous deposit; *colon* in a similar condition; *rectum* also congested in spots. Digestive system.

[*Note.*—Time did not permit of a more detailed examination of this case.]

No. 16.

Cow (aged 5 years), examined at Madarkhat 31st January 1870.—*Hospital Case No.* 15.—20½ *hours dead.—Condition, fair.*

No eruption on *skin; vagina* deeply congested: presents the usual livid appearance round the borders of the *labia*. Cutaneous system.

Excoriations are seen on the corners of the *lips* and on the upper and lower *gums;* there are patches of deep congestion and excoriation at the base of the *tongue; soft palate* quite dark with congestion; there is a long excoriation on the left side of the *hard* palate; *pharynx* congested; *rumen* slightly congested at the lower (posterior) portion; food hard and dry (the animal not having had water for three or four days); *reticulum* constricted, holding a very small quantity of food, congested more slightly than rumen; *omasum* impacted, and folds congested; *abomasum* deeply congested over the whole mucous surface; livid at the cardiac orifice, where there is a small amount of aphthous deposit; pylorus of the same color, but here no aphtha is seen; the *small intestines* are congested throughout, of a bright claret colour; *Peyer's patches* are livid round their base, and covered with aphthous deposit; *solitary glands* enlarged and covered with aphtha; there is submucous hæmorrhage, in some places to a very considerable extent, causing the mucous membrane to be raised; *cæcum* not constricted, but its mucous membrane is deeply congested; *colon* in the same condition; *rectum* congested; there are grey longitudinal striæ of submucous exudation; all the intestines contain very scanty material, that in the *rectum* being simply mucus; *liver* congested; *gall-bladder* much distended with light-colored bile, and very distinct aphthous patches are seen on its mucous membrane, portions of which are here and there congested; *kidneys* congested. Digestive system.

Posterior nares deeply congested; *larynx* similarly affected; there is a slight amount of aphtha at the root of the *epiglottis; lungs* congested, and some portions show considerable intra and interlobular emphysema, better marked than in any subject hitherto examined. Respiratory system.

Pericardium congested; one or two parasites are seen on the surface of this membrane; both sides of the *heart* are filled with dark clots. Circulatory system.

Brain not opened. Nervous system.

No. 17.

Cow (5 years), examined at Madarkhat 31st January 1870. *Dead 26 hours.—No. 17 in Hospital Register.—Condition, poor.*

No eruption on *skin; vagina* congested; there is aphthous deposit within two inches of the external orifice. Cutaneous system.

Excoriations on *gums* and posterior portion of *hard palate;* congestion and excoriation at base of *tongue* and over surface of *pharynx; omentum* shows, as in some of the other cases, Digestive system.

tassel-like fringes, which, on microscopic examination, are found to be loops of dilated capillaries; membrane generally congested; *rumen* contains the usual amount of food and numerous bots; *reticulum* healthy, contains bots; *omasum* slightly impacted and congested; there is deep congestion of the *abomasum;* the folds present a livid color, and there is aphthous deposit around both the cardiac and pyloric orifices; the *duodenum* presents an inky color from submucous hæmorrhage, and there is aphthous deposit close to the pyloric orifice; the *jejunum* is deeply congested; the *small intestines* contain only a small quantity of viscid mucus; *solitary glands* and *Peyer's patches* tumid; there are deposits, shaped like small mushrooms, found here and there; the *cæcum* is very much constricted; there are some patches of very deep congestion and a few aphthous deposits; the *colon* is in the same state, and presents grey striæ of submucous hæmorrhage running along the bowel, extending also into the cœcum; the *rectum* is not so deeply congested; *liver* congested; *gall-bladder* distended with bile of a dark color; *kidneys* slightly congested.

Respiratory system. *Posterior nares* deeply congested and covered with a dense layer of aphtha; *larynx* congested and covered to a smaller extent with aphtha, on removing which the mucous membrane is found to be livid in color; the aphtha is closely adherent; the *lungs* exhibit interlobular emphysema in a very remarkable manner (the most severe case hitherto seen): the lobules can be easily separated from each other by a little traction.

Circulatory system. *Pericardium* shows some patches of congestion; the surface of the *heart* exhibits patches of subserous exudation (*query* discolored serum ?)

Reproductive system. The mucous membrane of the *uterus* is congested.

Nervous system. *Brain* not opened.

No. 18.

Bullock (5 years), examined at Madarkhat 4th February 1870.—*Dead* 12 *hours. No.* 4 *in Register of Experimental cases.—Condition, fair.*

Cutaneous system. No eruption on *skin*; *prepuce* congested.

Digestive system. Base of *tongue* much congested and exhibits black spots of submucous hæmorrhage and aphthous deposit; *pharynx* intensely congested and covered with an aphthous deposit; the *peritoneum* is generally congested, especially in the furrows marking the divisions between the stomachs, and the larger omentum shows fringes of dilated vessels; there is slight congestion of the cuticular coat of the *rumen;* the peritoneal coat of the *reticulum* is more congested than that of the other stomachs; contains a number of bots; the membrane lining cells is congested; the folds of the *omasum* are congested, particularly towards attached border; the *abomasum* is deeply congested; there are patches of submucous exudation; folds of a very deep claret color; there are patches of aphthous deposit and layers of the same under the folds; on the removal of this deposit the membrane is seen to be of a deep claret color; there are patches of easily removed aphthous deposit at cardiac and pyloric orifices: when these are washed off by a stream of water, a raw-looking claret-colored surface is exposed; the stomachs contain the normal amount of food of the usual consistence; the *duodenum* is deeply congested and shows aphthous deposit and striæ of submucous exudation; the *jejunum* is of a darker color, caused by submucous exudation; its surface is covered with patches of congestion, color varying according to the time which has elapsed since submucous exudation has taken place; the *small intestines* generally present externally a pink color; the mucous membrane is generally thickened, and where submucous extravasation has taken place the thickness is greater; contents scanty, yellow, viscid, and mucous; amidst the general congestion there are streaks of darker congestion varying in length from 1 to 3 inches: *Peyer's spatches* are congested and present a claret tint in patches, some portions of the surface being apparently healthy, while others are the seat of submucous hæmorrhage; the *solitary glands* are tumid and claret-colored at their bases from submucous hæmorrhage, and yellowish wax-like material can be squeezed out of them; transverse striæ, some light red, some dark red, and a few greyish-black in colour, mark where the circular muscular fibres of the intestine have been in a state of constriction for some hours before death; the *mesenteric glands* are congested both on the surface and in their texture; the *cæcum* is slightly constricted at the blind end there is one very dark claret-colored patch; the mucous membrane is generally deeply congested, and aphthous patches occur here and there; the upper part of the cœcum is mottled with grey striæ and red patches of submucous exudation; the *colon* is in a similar condition at its commencement, but improves as the examination proceeds; the *rectum* shows longitudinal striæ and aphthous deposit; *liver* congested; *gall-bladder* distended with emerald green bile, and lining membrane patchy, with congestion, and covered with aphthous deposit; mucous membrane very much thickened; on removing the aphtha, pits are left; *kidneys* congested; lining membrane of pelvis deeply congested; the mucous membrane of the *ureter* and *bladder* also exhibits congestion, submucous exudation, and aphthous deposit.

Respiratory system. *Posterior nares* deeply congested and slightly covered with aphtha; mucous membrane very tumid; the borders of the *epiglottis* are tumid, congested, and aphthous;

the *larynx* and upper portion of the *trachea* are in the same condition; the aphthous deposit is not thick, but entirely covers the mucous membrane; the whole inner surface of the trachea is congested and covered with aphthous deposit; *lungs* generally congested of a bright reddish or pink color; emphysema, both interlobular and subpleural, exists; portions of lobes are in a collapsed state.

The *left ventricle* of the heart is partially congested, and shows spots of submucous; hæmorrhage. Circulatory system.

The *dura mater* is healthy; *pia mater* very much congested; there is sub-arachnoid effusion, and the *lateral ventricles* contain a considerable amount of sanguineous serum; the substance of the *brain* is punctated; the *choroid plexus* is engorged; the *cerebellum* and *medulla oblongata* are healthy. Nervous system.

No. 19.

Cow (aged), examined at Madarkhat 4th February 1870.—*Dead about* 6 *hours.—No.* 5 *in Register of Experimental Cases—Condition, fair.*

No eruption on the *skin; vagina* congested and aphthous. Cutaneous system.

The root of the *tongue* and *pharynx* are congested and slightly covered with aphtha there are vascular fringes on the surface of the larger omentum; there is congestion of the cuticular lining of the *rumen* and *reticulum*, both of which contain bots; the peritoneal covering of the latter is also congested; the folds of the *omasum* are congested; the *abomasum* presents the same appearances described in the last case (No. 18), but there is more aphthous deposit; the *small intestines* also show similar features to those of No. 18, and contain similar material; *Peyer's patches* are congested, but not so severely as in last case; there is thickening and submucous exudation; the *solitary glands* are somewhat swollen; the transverse stripes of congestion are here and there very well marked; the *cæcum* is not much constricted; the contents are more or less bloody; the congestion is deeper than in the last case, and there is one large aphthous patch measuring 3½ inches by 2½ inches; the *colon* is deeply congested, and shows striæ and dark patches of submucous exudation; the *rectum* is less severely congested, but also exhibits submucous exudation; the *liver* is congested, and the *gall-bladder* is much distended with light colored bile; its lining membrane is congested; the *kidneys* are congested, and the membrane lining the pelvis slightly so; *spleen* congested. Digestive system.

The *posterior nares* are very tumid and deeply congested; the epithelium covering the membrane is dense; the *larynx* and *trachea* are much congested, the latter more so; the *lungs* are congested here and there, and show a commencement of interlobular emphysema. Respiratory system.

The *pericardium* shows patches of congestion; the outer wall of the right ventricle is congested; its lining membrane is dull in color. Circulatory system.

The *dura mater* is healthy, the *pia mater* is congested, and *choroid plexus* engorged; the substance of the *brain* is healthy, as also the *cerebellum* and *medulla oblongata*. Nervous system.

No. 20.

Bullock, examined at Madarkhat 7th February 1870.—*Dead* 2 *hours.—Hospital Case No.* 14.—*Condition, very poor.*

Ears scabby; the inside of the hind legs has a scalded appearance from the absence of hair, and small patches of bare skin are seen all over the body; the *epidermis* is generally chaffy; the *cornea* of the right eye is opaque; there is *staphyloma* of the left eye and a fungous protrusion through the ulcerated cornea. Cutaneous system.

There are a few fringes of convoluted vessels on the larger *omentum*, faint in color; the *rumen* is healthy, with the exception of one portion of the cuticular lining, which is inflamed; *reticulum* healthy, also the *omasum*; the *abomasum* is congested; mucous membrane is of a light pink color, evidently recent; there is no thickening and no marks of old lesions; all the stomachs contain food of the usual consistence; the *small intestines* are here and there slightly congested, containing a small quantity of liquid food; the *cæcum* shows three or four cicatrices of former ulcers at fundus; there are slight traces of longitudinal striæ of submucous hæmorrhage; these striæ are still fainter in the *colon*; the *rectum* is healthy; *kidneys* healthy; *spleen* healthy; the *gall-bladder* contains dark bloody bile; the mucous membrane is deeply congested, and there is submucous extravasation; the *liver* is much congested and contains a tuberculous deposit. Digestive system.

The *lungs* are healthy. Respiratory system.

The *heart* is flabby in texture and light in color. Circulatory system.

The *brain* and *mouth* were not examined. Nervous system.

No. 21.

Buffalo (male), examined at Madarkhat 8th February 1870.—*Dead* 12 *hours.—No.* 3 *in Hospital Register.—Condition, fair.*

Cutaneous system. There is a livid patchiness all over the belly and inside the legs and thighs; there is no eruption on the *skin*; the mucous membrane of the *prepuce* is highly congested and thickened.

Digestive system. The base of the *tongue* and the *pharynx* are highly congested, and show an aphthous deposit; the *soft palate* is much thickened, and exhibits extensive submucous extravasation; the lower part of the *pharynx* is particularly congested; the commencement of the *œsophagus* is highly congested; the larger omentum is covered with fringes of convoluted vessels, which are also evident on the parietal peritoneum, and there is slight adhesion between the opposing surfaces; there is also partial adhesion between the surfaces of the omentum and rumen; *rumen* healthy; the cuticle is easily removed; organ full of food, and contains bots; the peritoneal surface of the *reticulum* is congested; the *viscus* contains a small quantity of food, and the floor of the cells is congested; the *omasum* is slightly impacted, and the folds are very slightly congested; the *abomasum* contains the usual amount of food; the peritoneal surface is congested along the lower border; the whole mucous surface of this organ is highly congested, and claret-colored patches are seen here and there; there is a small aphthous deposit at the pylorus, and submucous hæmorrhage has taken place at various spots on and near the folds; here also aphthous deposits and patches of excoriation are seen; the *duodenum* is much congested, and shows here and there small claret-colored patches; the contents of the *small intestines* are scanty, and consist chiefly of mucus; *Peyer's patches* are highly congested; they appear as claret-colored patches on the less vividly tinted mucous membrane; in some of them submucous hæmorrhage has taken place; the *solitary glands* are congested, but not much swollen; there are here and there claret-colored patches all over the mucous membrane, and one or two clots of submucous hæmorrhage are apparent. The *mesenteric glands* are healthy; the surfaces of the small intestines and lesser omentum are more or less adherent by patches of convoluted vessels on the peritoneal aspect; the *cæcum* is constricted, and contains only mucus and blood; its mucous membrane is highly congested, and in some places excoriated, the epithelium having been removed, and the surface appearing red and raw; the *colon* is similarly affected, but not in such a bad state; the *rectum* is comparatively healthy; the *liver* is in a state of fatty degeneration; there are numerous fibro-cartilaginous cells throughout the organ (bile ducts distended and containing flukes), and there is hæmorrhagic effusion into the substance of the organ at one point; the *gall-bladder* is full of bloody bile; the *mucous membrane* is highly congested, thickened, and shows submucous hæmorrhage; the *kidneys* are congested; the mucous membrane of the pelvis is congested in patches.

Respiratory system. The *posterior nares* show great tumidity of membrane and an inky color; the *larynx* and *trachea* are congested; mucous membrane thickened and covered with aphthous deposit; at the bifurcation, the latter is congested in short striqus patches; the *lungs* are very much congested, more especially the right lung, which adheres to the parietes superiorly by membranous bands; the upper lobe of the left lung shows interlobular emphysema; the right lung is heavy and partially hepatized.

Circulatory system. The *pericardium* is congested in the course of the vessels, especially on the left side of the heart; the *right ventricle* is highlyc ongested, and there are patches of subserous hæmorrhage all over the membrane lining the cavity; the *left ventricle* is in the same condition, the patches being larger. The texture of the *heart* is flabby, and the muscle is lighter in color than usual.

Nervous system. *Skull* not opened.

No. 22.

Bullock, examined at Madarkhat 9th February 1870.—*Dead about* 12 *hours.—No.* 4 *in Hospital Register.—Condition, extremely emaciated.*

Cutaneous system. No eruption on *skin*; there is congestion around sac of inoculation; no pus; surface granulating; the *prepuce* is slightly congested.

Digestive system. The *gums* are congested, and show very well marked aphthous ulcers; the *hard palate* is congested, and exhibits very well marked aphthous excoriations; the *tongue* is furred, and at its base aphthous deposit and excoriations are seen; the *pharynx* is tumid, congested, and covered with patches of aphtha; the *œsophagus* is healthy; there are vascular fringes on the surface of the *omentum*, which is generally congested; the lining membrane of the *rumen* is congested, as also of the *reticulum* and *omasum*; the mucous membrane of the *abomasum* is deeply congested, and of a dark mahogany color; contents as usual; the membrane of the pyloric portion of the organ is tumid, swollen, and deeply congested; the *duodenum* is congested in spots; there are aphthous patches and ulcers on its surface; the membrane is tumid; the surface of the *small intestine* is congested in spots and branches containing black blood; the *solitary glands* are in a state of chronic enlargement, some are congested and others ulcerated, discharging abundant ceruminous stuff; *Peyer's patches* are normal; *mesenteric glands* healthy;

there is bright congestion in patches and longitudinal pigmented striation in the *cæcum*, where aphthous spots are also seen; the *colon* is in the same condition near the *cæcum*, but not so diseased further on; the *solitary glands* are enlarged and congested; *the rectum* is congested, and shows longitudinal pigmented striæ; contents thin, liquid, and bloody; the *liver* is fatty and congested; the *gall-bladder* is distended with dark-green bile; mucous membrane healthy; the *kidneys* are congested; *ileum* healthy.

Nares tumid; membrane deeply congested; the *larynx* is congested and very livid; there are aphthous patches on the surface; the *trachea* is deeply congested, and shows aphthous deposit and submucous hæmorrhage; *right lung* much congested; interlobular emphysema very well marked; the *left lung* is in the same state. Respiratory system.

The lining membrane of the right cavities of the *heart* is stained, that of the left healthy; the mitral valve is thickened and atrophied; the muscle of the heart is flabby. Circulatory system.

The *dura mater* is healthy; *pia mater* congested; there is a little fluid in the lateral ventricles; the *choroid plexus* is engorged; substance of the brain, &c., healthy. Nervous system.

No. 23.

Bullock, examined at Mudarkhat 9th February 1870, *immediately after having been bled to death.—No. 5 on Hospital Register.—Condition, extremely emaciated.*

No eruption on *skin; prepuce* healthy. Cutaneous system.

The *gums* and *palate* are congested; the *tongue* is furred; its root healthy, as also the surface of the *pharynx* and *œsophagus;* the *peritoneum* shows no disease; peritoneal coat of *rumen* congested at upper border; lining membrane healthy; contains numerous bots; *reticulum* slightly congested; contains numerous bots; the *omasum* is very slightly congested; there is no impaction; the *abomasum* is highly congestive; there is no aphthous deposit; the *duodenum* is slightly congested and of a pink color, contrasting remarkably with the pyloric half of the stomach; small intestine slightly congested; *mesenteric glands* healthy; the *cæcum* is slightly congested in patches; the *colon* is very slightly affected, but the *rectum* is much congested; *liver* slightly congested; *gall-bladder* filled with mulberry-colored bile; lining membrane congested; *kidneys* slightly congested; *spleen* healthy. Digestive system.

There is slight tumidity and congestion of *nares;* the *larynx* and *trachea* are slightly congested, latter more so; former contains a mass of filariæ; *pleura* healthy; *lungs* congested, and exhibit interlobular emphysema. Respiratory system.

There are slight patches of congestion and some vascular fringes on the *pericardium;* the lining membrane of the right cavities is healthy, but there are small patches of subserous hæmorrhage in the left ventricle. Circulatory system.

Brain not opened. Nervous system.

No. 24.

A bullock (5 *years old*), *examined at Chooadangah 8th March* 1870.—*Dead* 14 *hours;* 7 *days ill.—Condition, fair.*

The *skin* in the neighbourhood of the scrotum is covered with a sebaceous exudation, which in some places forms definite scabs, on removing which a livid papillated surface is exposed; in some places there is a slight excoriation; the roots of the nipples are encrusted and somewhat cracked; *prepuce* highly congested; the flesh is pale and flaccid. Cutaneous system.

Soft palate and *pharynx* congested; mucous membrane very much thickened; no aphtha; the larger *omentum* is very much congested, and there is subserous hæmorrhage, and patches of convoluted vessels are seen on the surface; there are patches of congestion on the peritoneal surface of the *rumen*, whose coats are thickened; contents abundant, dry; the cuticular lining is congested; the *reticulum* contains a small quantity of food, and the greater part of its lining membrane is congested; the contents of the *omasum* are scanty and liquid; there are aphthous deposits on the folds, both longer and shorter; here and there ulceration, leading to the formation of irregularly shaped perforations ½ to ¼ inch in diameter, is discernible; aphthous deposits are also seen on the free edges of the folds, also at the attached edges; they occur in fact all over the folds; the contents of the *abomasum* are scanty and very liquid; the mucous membrane is deeply congested, and the folds are of a livid bluish color; on the surface of the folds are seen patches of submucous hæmorrhage causing thickening of the membrane, and numerous excoriations with more or less aphthous deposit; on removing the aphtha, irregularly shaped pits are left; there are aphthous ulcers on the pylorus, two of them very large; there is considerable submucous pigment deposit, and when water is poured over the surface it has a mottled or marble-like appearance; when one of the pyloric ulcers is transversely divided, the mucous membrane is found to have been destroyed down to the muscular coat; this is true of several of the ulcers in this neighbourhood; the *duodenum* has the same color as the fourth stomach, and many small pea-like aphthous deposits are found on the surface; there is also submucous Digestive system.

hæmorrhage causing a variety of hues; these small pea-like deposits can be generally removed, and the mucous membrane is found whole, but one or two have an ulcerated base; the contents of the *small intestines* are very scanty, yellow, and ochre-like in color, and liquid; the submucous vessels are much distended, and the blood they contain is very dark; around some of the larger vessels submucous exudation is very well marked; the *solitary glands* are tumid, and congested around base; *Peyer's patches* are not congested or otherwise affected; by the microscope much submucous hæmorrhage is seen in the neighbourhood of the vessels; the *cæcum* is less constricted than in the Assam cases; contents scanty and liquid; upper portion slightly congested; lower portion all but natural in color; the whole mucous surface is marked with lines of submucous hæmorrhage, giving a marble-like appearance; many small aphthous deposits are found in various parts of the bowel, especially around the *ileo-cæcal valve*; the aphthous matter is easily removed, and does not reach the muscular coat; color ochre-like; the *colon* is in the same state as the *cæcum*; there are reticulated pigmented lines; there are longitudinal pigmentary striæ in the *rectum*, whose mucous membrane is very much thickened; the *liver* is congested and fatty; the *gall-bladder* contains dark-green treacle-like bile; mucous membrane thickened; the *kidneys* are much congested and mottled in appearance; the lining membrane of the *pelvis* very much congested and thickened; the *spleen* is engorged and very friable; there are livid spots beneath the capsule, which is considerably congested; *pancreas* congested; *mesenteric glands* congested and softened.

Respiratory system. The *posterior nares* are livid in color and congested; the *larynx* is congested, especially the borders and point of the epiglottis; *trachea* much congested, especially at its upper portion; no aphtha; right *costal pleura* much congested at its upper portion, and covered with a small quantity of lymph, where the middle lobe of the lung adheres to it; there are adhesions between the lobes of the *right lung*; the upper lobe is collapsed; there is slight emphysema and red hepatization of the middle lobe; the lower lobe is partially hepatized the lower portion is slightly congested with inter and intralobular emphysema; the *left lung* is deeply congested with inter and intralobular emphysema.

Circulatory system. The *pericardium* is congested; there are large patches of subserous hæmorrhage, particularly well marked on the surface of the pulmonary artery; there are vascular fringes on the roots of the large vessels; there is a large, firm, ebony-black clot in the right cavity of *heart*; the lining membrane is mahogany colored; the clots extend into the large vessels in all directions; there are smaller clots in the left cavities; there is a fibrinous clot in the left auricle, very firm, and apparently partially organized; lining membrane of left cavities of a mahogany color; the muscular substance is fatty and flabby.

Nervous system. *Brain* not examined.

No. 25.

A cart bullock, examined at Chooadangah 8th March 1870.—Dead 10 hours.—No. 23 in Hospital Register.—Condition, very good.

Cutaneous system. There is great, general subcutaneous congestion; the *skin* around the *scrotum* is of a livid color, and there are some scabs, dry, and removed with some difficulty, leaving a dark livid base in the vicinity of the teats; there is a large deposit of coagulated blood in the subcutaneous tissue of the neck and in the fibrous tissue surrounding the muscles; the tissues of the neck are, in fact, generally infiltrated with bloody serum, just as if the animal had been throttled; the *submaxillary glands* are much congested; the *parotid glands* are engorged; the mucous surface of the *prepuce* is of a very dark claret color, and shows an aphthous deposit similar to that seen in the *trachea*.

Digestive system. The *hard palate* is covered with excoriations; there is aphthous deposit and excoriation on under surface of point of *tongue*; the papillæ of the tongue are much enlarged and furred; the root of the organ is covered with aphtha; the *soft palate* is tumid, livid, and extremely congested; the *pharynx* is in a similar condition; there are aphthous spots and patches on the surface; there is hæmorrhage into the submucous connective tissue; the cuticular lining of the *æsophagus* is thickened and cracked longitudinally; there is great congestion beneath the cuticle; the *rumen* contains a large quantity of very dry food; there are patches of congestion on the smooth cuticular coat; the *reticulum* shows large patches of congestion; the *omasum* is impacted, and shows well marked patches of congestion on the folds and aphthous deposits (*vide* Plates IX and X, Third Report of English Cattle Plague Commissioners); the *abomasum* presents precisely the same appearances as noted in case No. 24, but the aphthous deposits are very small indeed; the pyloric portion is not of the blue slate-color of hue, but bright from acute congestion, and at the pylorus itself there is abundant deposited aphtha, on removing which a dark, raw-looking and ulcerated surface is left; the *duodenum* is congested, but to no great extent; but the whole lining membrane is studded with spots of acute congestion about the size of a pea; the *small intestines* are comparatively healthy; here and there are large diffused patches, and occasionally smaller patches of congestion; *Peyer's patches* are comparatively healthy; there are points of congestion seen here and there; the *cæcum* is not constricted as in the cases examined in Assam; the *large intestines* present the appearances noted in the last case (No. 24), but the reticulated or marble-like appearance is not

so well marked; there are a few aphthous deposits; the *colon* also contains some aphthous deposits, one of which is larger than the rest, measuring ¼ by ½ inch; there are faint lines of submucous hæmorrhage on the *rectum;* the *liver* is soft and somewhat disorganized; the *gall-bladder* is very much distended with bile of a natural color; lining membrane studded with aphthous deposits. The *kidneys* are very soft and of a very pale color; some of the lobes are disorganized and crepitate in handling; the *spleen* is enlarged, and contains very dark treacle-like blood; texture excessively friable, and emphysematous around all the superficial blood-vessels.

The *posterior nares* show a tumid, livid, and extremely congested membrane; the *larynx* is livid, tumid, and intensely congested; there are aphthous patches, and the mucous membrane shows elongated mulberry-colored spots; the *trachea* is coated with a pellicle of aphtha, of a greenish-brown color, on removing which an intensely congested livid surface with points of submucous hæmorrhage is disclosed; the continuation of the tube is intensely congested and covered with an aphthous pellicle; the *right lung* is intensely congested; there is interlobular and intralobular emphysema; the *left lung* is in the same condition; there is a large cyst in the lower lobe. Respiratory system.

There are patches of congestion and vascular fringes on the *pericardium;* the right cavities of the *heart* contain black clots; the lining membrane is stained of a mahogany color; there is a small black clot in the left cavities; the muscular substance is fatty and flabby. Circulatory system.

The *brain* is healthy; the *choroid plexus* is a little congested. Nervous system.

No. 26.

A bullock, examined at Chooadangah 10th March 1870.—*Dead* 3 *hours.—No.* 30 *in Hospital Register.*

On removing the *hide* subcutaneous congestion is generally seen. Cutaneous system.

There are spots of ecchymosis on under surface of *tongue;* the *pharynx* is deeply congested and aphthous; there are vascular fringes on the surface of the *omentum,* some very long, and others broad; the *rumen* contains a large quantity of soft food; smooth portion of cuticular lining congested and showing two aphthous deposits; the congestion of the *reticulum* is well marked on the walls of the cells; there are patches of congestion on several folds of the *omasum,* better marked on some than others (*vide* Plate No. IX, Third Report of the English Cattle Plague Commissioners); here also aphthous deposit is seen; the mucous membrane of the *abomasum* is of a deep slate color, that of the borders of the folds being deeper; there are aphthous ulcers at the cardiac orifice and about the centre of the stomach (former measuring 2½ by 1½ inch, latter ½ by 1½ inch); towards the pylorus the folds of the stomach are much tumefied by submucous hæmorrhage, the ridges being of a bright claret tint and the furrows duller in color; clots of aphtha are attached to the pylorus and first portion of the *duodenum,* which is in much the same condition as the stomach, and several clots are floating in the liquid contents of the bowel; the *small intestines* are deeply congested; the coats are very much thickened by submucous hæmorrhage, and several portions have an all but purple color. *Peyer's patches* are extremely diseased, deeply congested with aphthous deposits and ulcers; the *cæcum* is slightly constricted; contents bloody and grumous; the mucous membrane is very dark in color, and there is extensive submucous hæmorrhage and much aphthous deposit; there are dark pigmentary striæ; the color is very much darker; the contents of the *colon* are similar, and the appearance of the bowel similar in every respect; the *rectum* is congested, but not so dark as *colon;* the *liver* is congested and friable; the *gall-bladder* is enormously distended with dark-colored bile; the *kidneys* are congested; the *spleen* is comparatively healthy. Digestive system.

The mucous membrane of the *posterior nares* is deeply congested and covered with dense aphtha, on removing which the mucous membrane is found to be of a dark purple color; both lobes of the *right lung* show interlobular emphysema, and in the *left lung* there is subpleural and intralobular emphysema. Respiratory system.

On the *pericardium* and surface of the *heart* patches of congestion are seen, and many spots of ecchymosis are seen along the coronary vessels. There are several spots of subserous hæmorrhage in the left ventricle of the *heart.* Circulatory system.

The *lateral ventricles* contained a considerable quantity of sanguineous serum; *choroid plexus* engorged. Nervous system.

No. 27.

A bullock, examined at Chooadangah 10th March 1870.—*Dead* 20 *hours.*

(This animal was brought from the village of Jengramaree, where it had been seen on the 7th. Its condition was then described as follows:— History.

Bullock, 7 days ill; 3 days off feed; 6 or 7 years old; condition fair; has running from eyes, nose, and mouth; muzzle dry; mouth cold; very weak, lying down; aphthous deposit inside and outside gums; breath offensive; dysentery; conjunctiva congested.)

Cutaneous system. There is general subcutaneous congestion.

Digestive system. There are vascular fringes on the *omentum;* the *rumen* contains pultaceous food and shows slight patches of congestion; the *reticulum* is healthy; on the folds of the *omasum* there are well marked patches of congestion, and here and there small aphthous patches; the *abomasum* is not so deeply congested as is usually seen; but many patches of submucous hæmorrhage and aphthous deposit are seen; the aphtha and submucous hæmorrhage are in clustered patches; the *smallintestines* are deeply congested; the contents of the *cæcum* are scanty and green in color, and the membrane is deeply congested and shows pigmentary striæ and many spots of aphtha; there is submucous hæmorrhage causing a thickening of the coat; the *rectum* is deeply congested, and also shows pigmentary striæ; the *liver* is much congested.

Respiratory system. The *larynx* is very much congested and aphthous. The *lungs* are emphysematous; the emphysema is interlobular, intralobular, and subpleural.

Circulatory system. There is subserous hæmorrhage at the root of the pulmonary artery; the right and left cavities are full of clots of dark blood.

Nervous system. The *pia mater* is very much congested, and the *choroid plexus* engorged.

[*Note.*—The examination was performed late in the evening, and night coming on, it could not be completed.]

No. 28.

A cow (2 *years*), *examined at Chooadangah* 11*th March* 1870.—*Dead* 8 *hours.*—*Alleged case of "Puschima."—Condition, good.*

Cutaneous system. There is general subcutaneous congestion and ecchymosis under skin of neck; the *vagina* is congested.

Digestive system. The cuticle peels off the side of the *tongue,* leaving a congested surface, in some places ecchymotic; the *pharynx* is constricted, surface congested, and cuticle separating; viscid mucus-like material adheres to the surface of the pharynx and epiglottis; there are vascular fringes on the surface of the *omentum;* the contents of the *rumen* are pultaceous; lining membrane slightly congested; *reticulum* healthy; there are patches of congestion on the folds of the *omasum,* specially at their attached border; contents soft; the contents of the *abomasum* are soft; there is general congestion of the whole lining membrane, uniform and rather dark in color; no patches; the *duodenum* is congested; pigmentary striæ appear on the first third of the gut, giving a mottled appearance; throughout the *small intestines* there are spots of congestion, some of them ecchymotic in appearance; *Peyer's patches* healthy; contents of *cæcum* scanty; gut constricted; mucous surface slightly congested and showing light colored striæ; the *colon* is in much the same condition; *rectum* very slightly congested; the *liver* is congested; substance firm; *gall-bladder* full of healthy bile; no aphtha; *spleen* healthy; *kidneys* slightly congested.

Respiratory system. The mucous membrane of the *posterior nares* is tumid and congested; the *larynx* is coated internally with viscid frothy mucus, which on removal leaves a congested surface with spots of ecchymosis; the *trachea* and *bronchi* are in the same condition; latter filled with viscid mucus, their lining membrane being intensely congested; both the *lungs* are much engorged, particularly the upper lobes; they are dark in color, and contain in their tissue much black blood.

Circulatory system. There are large patches of congestion on the surface of the *pericardium,* measuring from 1 inch to 1½ inch in diameter; there is slight adhesion between the visceral and parietal portion of the membrane at its reflection, and patches of ecchymosis are seen on the root of the pulmonary artery and at the base of the *heart;* there are inky clots in all the cavities of the organ.

Nervous system. *Brain* was not examined.

No. 29.

A cow, examined at Chooadangah 11*th March* 1870.—*Dead* 22 *hours.*

Digestive system. There is aphthous deposit at the base of the *tongue,* and to a slight extent in the *rumen* and *reticulum;* the *omasum* is slightly congested and shows no aphtha; there are aphthous patches and ulcers in the *abomasum,* whose mucous membrane exhibits a general slate color; the *duodenum* is in the same condition.

Respiratory system. The *larynx* is slightly congested and shows aphthous deposit.

[*Note.*—Night coming on, this examination could not be completed.]

No. 30.

A bullock, examined at Chooadangah 11*th March* 1870.—*Dead* 20 *hours.*—*No.* 28 *in the Hospital Register.*

Digestive system. *Rumen* and *reticulum* are healthy; patches of congestion and aphthous deposits in the *omasum;* mucous membrane of the *abomasum* is of a deep-blue slate color; there is aphthous

deposit at the cardiac orifice and an aphthous ulcer at the *pylorus;* the *duodenum* is in the same state as the 4th stomach; the congestion of *Peyer's patches* is well marked; the mucous membrane of the *cæcum* is highly congested, and there are well marked patches of ecchymosis and a slight aphthous deposit; the *colon* is in a similar condition.

[*Note.*—Night coming on, this examination could not be completed.]

No. 31.

A cow, examined at Chooadangah 12th March 1870.—*Condition, fair.*

The *pharynx* is congested; the *rumen* is congested, and there are several patches of aphtha on its inner surface; there are several well marked patches of congestion on the lining membrane of the *reticulum,* and in the centre of six or seven of the cells, where the congestion is best marked; cuticular scab-like desquamation, evidently aphthous, is found; the *omasum* is impacted; food very dry and hard; the folds are very much congested, and on several of them are deposits of aphtha; the *abomasum* contained a quantity of green liquid food; its mucous membrane is deeply congested, and the edges of the folds are livid and slate-colored; there is a large aphthous ulcer down to the peritoneal coat; there is aphthous deposit at the cardiac orifice and pylorus; the *duodenum* is in the same state as the *abomasum;* there is an aphthous deposit upon *Peyer's patches;* the mucous membrane of the *cæcum* is highly congested and exhibits pigmentary striæ; the *colon* is in the same state, and shows some aphthous deposits; the *rectum* is slightly congested, and there are faint pigmentary striæ on its mucous surface; *liver* and *kidneys* congested and decomposed; the *gall-bladder* is distended with light colored bile; there are aphthous patches on its mucous membrane. Digestive system.

The *larynx* is congested; the *lungs* are decomposed and congested. Respiratory system.

There are patches of congestion on the *pericardium.* Circulatory system.

The *brain* was not examined. Nervous system.

No. 32.

A bullock, examined at Chooadangah 14th March 1870.—*Dead* 10 *hours.*—*No.* 35 *in Hospital Register.*

The root of the *tongue* is congested and aphthous; the *pharynx* is deeply congested; the contents of the *rumen* are scanty; the cuticular lining exhibits a greater amount of congestion than has hitherto been seen; the peritoneal surface of the *reticulum* is congested in patches; the floors of the cells are much congested; the peritoneal surface of the *omasum* is congested, and there are three or four vascular fringes upon it; the organ is impacted, but its contents are not very dry; the folds exhibit the patchy congestion so often seen; there is an aphthous patch in the furrow between two folds, and there are other aphthous patches on the surface of the folds; there is more congestion here also than is usually seen; the lining membrane of the *abomasum* is of a dark purple color; there are two very large aphthous ulcers involving two folds, and the aphthous material is very generally spread over the rest of the surface; the mucous membrane around the ulcerated patches is about 1¾ inch thick, and the mucous membrane of the whole viscus is generally thickened; *duodenum* is deeply congested and of a deep livid color; the *small intestines* are generally congested; the *solitary glands* are enlarged; the *cæcum* is deeply congested and exhibits pigmentary striæ and dots of aphtha; the *colon* is in the same state, and aphtha is also found on its inner surface; the *rectum* is slightly congested and shows pigmentary striæ; the *liver* is congested; the *gall-bladder* is distended with light colored bile, and there are several aphthous dots on its mucous surface; the *kidneys* are congested, and the *spleen* is healthy. Digestive system.

The *larynx* and *trachea* are deeply congested; there is aphtha in the former; the *lungs* exhibit emphysema, subpleural, inter and intralobular. Respiratory system.

There are large patches of congestion on the parietal portion of the *pericardium,* and there are well marked spots of subserous hæmorrhage; there are also large patches of congestion at the roots of the *aorta* and *pulmonary artery;* there are inky clots in the cavities of the *heart.* Circulatory system.

Dura mater healthy; *pia mater* congested, somewhat thickened in several places, and morbidly adherent to the surface of the brain; the *lateral ventricles* contain a quantity of serum; on the under surface of the *cerebellum* there are vascular fringes of dilated capillaries, similar to those observed in other cases in the omentum; the lining membrane of the frontal sinuses is tumid, acutely congested, and covered in some places with aphthous material. Nervous system.

No. 33.

A bullock, examined at Chooadangah 16th March 1870.—*Dead* 6 *hours.*—*No.* 39 *in Hospital Register.*

There is desquamation of the cuticle of the *tongue;* root very much congested; *pharynx* very much congested, shows aphthous deposit; there are vascular fringes on the *omentum;* Digestive system.

the membrane is very much congested; the *rumen* is very much congested; the lining membrane is thickened and there is subcuticular hæmorrhage; the *reticulum* is congested; the *omasum* is congested, especially at the attached portions of the folds, where also many circular aphthous patches are seen; the mucous membrane of the *abomasum* exhibits a dark-blue, livid, slate color in many places, while elsewhere a dark claret color tint is seen; the folds are particularly livid; there are aphthous patches, many small ones, but one or two measuring from ½ to ¾ of an inch in diameter; the *duodenum* is deeply congested; there is an aphthous layer around the pylorus; there are also submucous hæmorrhage and thickening; the *small intestines* are deeply congested, of a bright claret color, showing a more severe degree of disease than has hitherto been seen; the *cæcum* has the same appearance as the small intestines—a very bright claret color; the *colon* is paler, and exhibits thickening here and there, and submucous extravasation of some standing; the *rectum* is congested and its mucous membrane covered with a pellicle of viscid mucus; the *liver* is congested; the *gall-bladder* is distended with coffee-colored bile; the *kidneys* are congested, and there are patches of congestion in the pelvis; the *spleen* is engorged with black blood, and there is subcapsular ecchymosis.

Respiratory system. The *posterior nares* have an inky color from extreme congestion; the *larynx* is very much congested and shows aphthous deposit, and the points of the arytenoid cartilages are much tumefied and rounded; there are well marked circular aphthous patches on the epiglottis and arytenoid cartilages; the whole of the *trachea* is in the same state as above described; the continuation of the *trachea* and the *bronchi* are deeply congested; the anterior aspect of the tube is more congested than the posterior; and the tube is filled with viscid frothy mucus, similar to that seen in case No. 28; there is an aphthous patch at the bifurcation; there are large patches of ecchymosis beneath the right costal pleura; the same appearance is noted on the left side, but not so extensive; the *lungs* show subpleural and interlobular emphysema at the apices; the lower portion of the *left lung* is hepatized, as also the upper and middle lobes of the *right lung*; the hepatization is both red and grey; the rest of this lung is congested.

Circulatory system. There is *ecchymosis* at the apex of the heart, and on other portions of the *pericardium*; there are vascular fringes at the reflected part of the membrane and at the roots of the aorta and pulmonary artery; the *right* cavities of the *heart* contain large, firm, dark clots; their lining membrane is healthy; the *left* cavity is remarkably healthy.

Nervous system. The *pia mater* is congested; the *lateral ventricles* are much distended with dark-colored serum; the white substance of the *brain* is punctated; the *choroid plexus* is ngorged; there are vascular fringes behind and below the *cerebellum*.

No. 34.

Cow (6 *years old*), *examined at Baloregunge* 11*th April* 1870.—*Dead* 19 *hours*; 8 *days ill.—Condition, fair.*

Cutaneous system. No *skin* eruption; a thick layer of aphtha lines the mucous membrane of the *vagina* which is deeply congested; there is prolapsus and deep congestion of the *anus*.

Digestive system. *Gums* much congested; aphthous deposit upon edges; *tongue* much furred; *pharynx* much congested, and covered with very viscid mucus, there is also submucous exudation; there are vascular fringes on the *omentum*, in which gland-like bodies are seen; the peritoneal surface is covered with many small dots of sub-peritoneal ecchymosis; the *rumen* and *reticulum* are very slightly congested; there are patches of congestion on the folds of the *omasum*; the mucous membrane of the *abomasum* is deeply congested; there are three or four patches of aphtha on the mucous folds, about ¼ inch by ½ inch, irregular in shape; at the pyloric and cardiac orifices layers of aphtha are found, and there is a plug of thick aphthous material found extending from the pylorus for some distance into the *duodenum*; the contents of the stomach are usual in quantity, and softish; the *small intestines* are generally not much congested, but there are very many well defined small claret-colored patches; *Peyer's patches* are deeply congested; there is an aphthous deposit over portions of them; the *solitary glands* are very much enlarged and covered with aphthous deposits of a mushroom shape; the *cæcum* is congested on its peritoneal surface; on opening it, the mucous membrane is found deeply congested, and dark patches, resulting from submucous hæmorrhage, are visible; these are here and there covered with aphtha; the aphtha which has covered other black patches is found floating in the dark and bloody contents of the bowel, which are scanty; the whole wall of the bowel is thickened from submucous hæmorrhage; there is aphtha in dense quantities at the *ileo-cæcal valve* and within the *colon* and *ileum*; both ileum and colon present the same appearance as the cœcum; the *rectum* is slightly congested; the *liver* is soft and friable; the *gall bladder* is distended with coffee-colored bile; the *spleen* is congested; *kidneys* congested; mucous membrane of *pelvis* much congested.

Respiratory system. The *posterior nares* are deeply congested, and there is tumidity and aphthous deposit; there is submucous extravasation around *larynx* and the upper portion of the *trachea*; the *larynx* is much congested; there is aphthous deposit in two circular patches, ½ inch in diameter,

over the arytenoid cartilages; there is a large deposit at the junction of the first ring of the trachea with the larynx; there is congestion of the trachea in streaks in the direction of the tube; the *lungs* show interlobular emphysema; in the right lung there is a cyst with a thick cartilaginous wall; the lungs are in a state of red hepatization, more particularly the right.

The *pericardium*, at its reflection over the right auricle, shows two or three patches of congestion; there are spots of subserous hæmorrhage in the *right ventricle*, and in the *left ventricle* there are several long patches of subserous hæmorrhage. Circulatory system.

Brain not examined. Nervous system.

No. 35.

Cow (8 *years old*), *examined at Baloregunge* 11*th April* 1870.—*Dead* 15 *hours*; 6 *days ill.*

No *skin* eruption; *vagina* deeply congested and prolapsed; there is aphthous deposit on the mucous surface. Cutaneous system.

The *gums* are congested and excoriated; there is aphthous deposit on the gums around the teeth; the *pharynx* is deeply congested, covered with a thin layer of aphtha: dorsum and root of *tongue* in a similar state; there are excoriations and aphthous deposit on the surface of the *hard palate*; on removing the aphtha a raw surface is disclosed; the stomachs contain the usual amount of food, which is soft, especially in the *omasum*; there are no marks of congestion in the *rumen*, *reticulum*, and *omasum*; the lining membrane of the *abomasum* is congested, and there are dark claret-colored patches on the folds; at the cardiac orifice the mucous membrane is of a very dark claret color, and there is here a slight aphthous deposit; at the pylorus a similar appearance is seen, with a more abundant aphthous deposit; the mucous membrane of the *duodenum* is very dark in color and thickened from submucous hæmorrhage; the *small intestines* are not generally congested, but spots of congestion are seen throughout the whole bowel; there are large mushroom-like aphthous deposits; *Peyer's patches* are deeply congested, and here and there covered with aphtha; the *solitary glands* are enlarged; the *cæcum* is constricted and deeply congested; there is a large dark claret-colored patch at the blind end; the rest of the bowel is mottled with longitudinal and transverse pigmentary striation; there is abundant aphthous deposit at the *ileo-cæcal valve*, where there is a dense layer of aphtha; the *colon* is marked by striæ of pigmentary matter throughout the bowel, and there is abundant aphthous deposit; the walls of the *cæcum* and *colon* are much thickened from submucous hæmorrhage; the *rectum* is congested, and presents a reticulated appearance from pigmentary deposit; the *liver* is soft and friable from fatty degeneration; the *gall-bladder* is distended with dark-green colored bile; the mucous membrane shows two or three dark patches of congestion, and thickening from submucous exudation; the *spleen* in congested, and there are patches of congestion on the peritoneal surface; the *kidneys* are congested. Digestive system.

The *posterior nares* are much congested and tumid; the *larynx* is deeply congested and nearly covered all over with a thin pellicle of aphtha; the lining membrane of the *trachea* and *bronchi* is congested; the *lungs* are much congested, and there is red hepatization here and there; there is also interlobular emphysema. Respiratory system.

There are several patches of congestion on the *pericardium*, especially around the root of the pulmonary artery, and at the upper portion of the *left ventricle* and along the furrow dividing the ventricles; there is a dark-colored clot in the right ventricle floating in a small amount of dark-colored serum, and the left ventricle has similar contents; there are very faint patches of subserous hæmorrhage in this cavity. Circulatory system.

Brain not examined. Nervous system.

No. 36.

Bullock (*aged*), *examined at Baloregunge* 15*th April* 1870.—*Dead* 10 *hours*; 7 *days ill.*—*Condition, poor.*

No *skin* eruption; *prepuce* congested, swollen, and aphthous in spots. Cutaneous system.

Gums congested and aphthous; *palate* congested and tumid; there are aphthous spots and patches on the surface; the *hard palate* exhibits excoriated patches and ulcers; there is an aphthous condition of the buccal membrane generally; below the point of the *tongue* there are aphthous deposits and slight excoriations; the dorsum of the organ is furred, and the root and mucous membrane of the *pharynx* congested and tumid, and covered with spots of aphtha; the *œsophagus* is healthy; there are vascular fringes on the *omentum*; there is general injection of the peritoneal surface of the *rumen*, and this is very apparent by transmitted light; contents soft; the *reticulum* is slightly congested and contains bots; the *omasum* is impacted; contents very hard and dry; all the folds are congested; the contents of the *abomasum* are liquid and light brown in color; the mucous membrane is swollen and congested; there are spots and patches of submucous hæmorrhage between the folds; the pylorus is thickened, contracted, and thrown into folds; the pyloric orifice is very bright, almost vermilion in color, for about Digestive system.

two inches above the orifice, and this surface is covered with flakes of orange-colored mucus; it is raw and excoriated-looking; the *duodenum* is congested; mucous membrane is swollen, and exhibits a pigmented reticulation; there are one or two elevated pustule-looking spots (glands distended with secretion); there is no aphthous deposit in the stomach or *duodenum*; the *small intestines* are very much congested; the mucous membrane is generally congested, but there are spots of brilliant congestion; there are mushroom-like bodies floating in the contents of the *small intestine*; the *solitary glands* are enlarged, emitting a curdy material, and intensely congested around; *Peyer's patches* are congested, and individual glands are swollen and contain curd-like matter; the *mesenteric glands* are slightly enlarged, but not congested, and filled with liquid dark-brown material; the *cæcum* is empty, but much contracted and thickened; there is general congestion, and a few aphthous spots are visible; there is pigmentary reticulation in the course of the vessels, which look as if they were shaded; the *colon* is less congested, and exhibits aphthous spots; the *rectum* is empty; its mucous membrane is congested, and has a striated and dotted appearance from pigmentation; the *liver* is a little fatty and congested; the *gall-bladder* is distended with claret-colored bile; the mucous membrane is not congested, but there are one or two aphthous-looking spots; the *spleen* is healthy, and the *kidneys* slightly congested.

Respiratory system. The mucous membrane of the *nares* is congested, tumid, and claret-colored; the *larynx* is congested; there are tumid spots, but no aphtha; the mucous membrane of the *trachea* is congested and striated; there are vascular fringes on both *pleuræ*, which are otherwise healthy; the *lungs* are generally congested; all the lobes show both interlobular and subpleural emphysema.

Circulatory system. The *pericardium* is injected; there are vascular fringes on its surface; the cavities of the *heart* contain a small amount of treacly-looking blood; the lining membrane of the *right ventricle* is slightly congested, also that of the *left*, which shows spots of subserous hæmorrhage.

Nervous system. The *pia mater* is congested; on the anterior lobe of the *cerebrum* a pigmented patch is seen, and elsewhere smaller pigmented patches are seen (reticulated vessels containing altered blood); the *ventricles* are distended with serum, and the *choroid plexus* is engorged; the substance of the *brain* is healthy; there is a thickened pigmented piece of *pia mater* seen on the posterior aspect of the *cerebellum*.

No. 37.

A bullock (8 *years old*), *examined at Katgora, in the District of Burdwan*, 17*th April* 1870.—*Dead* 3½ *hours*; 9 *days ill.*

Cutaneous system. No *skin* eruption; deep congestion of *urethra*; very viscid discharge from the tube, and an aphthous deposit on the mucous membrane.

Digestive system. There are excoriations and aphtha on the lower *gums* and inside the lips and cheeks; the *pharynx* is comparatively healthy; there are vascular fringes on the *omentum*; the *rumen* is congested; *reticulum* is slightly congested; there are well defined patches of congestion on the folds of the *omasum*; the whole mucous membrane of the *abomasum* is of a deep claret color, especially on the borders of the folds: there is slight aphthous deposit here and there; there are eight or ten aphthous ulcers at the pyloric orifice; the *duodenum* at the pylorus contains a clot of lymph (this clot is found to be of a constitution similar to aphtha and to contain many parasites); the whole of the mucous membrane of the *small intestines* is congested and covered with innumerable dark claret-colored patches of congestion; *Peyer's patches* are deeply congested, and show a deposit of aphtha; the *cæcum* is constricted, and contains a large lymph-like plug or clot in sanguineous liquid; the mucous membrane is deeply congested and of a dark plum color; there are many small aphthous ulcers; the *mesenteric glands* are very much congested.

Respiratory system. The *trachea* is deeply congested; the *larynx* is in the same condition, and its mucous membrane is covered with a yellow aphthous pellicle; the *lungs* are very much congested and beautifully marked with interlobular and subpleural emphysema, the lobes being capable of easy separation with the fingers, as the emphysema has in many parts completely separated them.

Circulatory system. There are spots of congestion on the *pericardium*; the right cavities of the *heart* are healthy; there are patches of subserous hæmorrhage in the left ventricle.

[*Note.*—This examination was performed in the course of a visit to the village Katgora, and was restricted to the organs which usually exhibit the signs of rinderpest most severely.]

No. 38.

A cow in calf (8 *years old*), *examined at Bood-Bood* 20*th April* 1870.—*Dead* 2 *hours*; 6 *days ill.*—*Condition, poor.*

Cutaneous system. No *skin* eruption; mucous membrane of *vagina* congested.

Digestive system. No excoriation in the *mouth*; *pharynx* very slightly congested; the *rumen* is healthy; *reticulum* slightly congested; the folds of the *omasum* are slightly congested; the *abomasum* exhibits general congestion of a slight description; at the pylorus there is a dark claret-colored

patch (measuring 4½ in. by 2½) with yellow aphthous deposit upon it, and several indurated scab-like deposits; the *duodenum* is congested: coats considerably thickened by submucous hæmorrhage and aphthous deposit; the *small intestines* exhibit a general congestion, and here and there patches of a darker congestion exist, with circular, orange-colored aphthous deposits; *Peyer's patches* are tumid and deeply congested; the *cæcum* is deeply congested and much thickened by submucous hæmorrhage, with much congestion of a deeper hue in patches; the *ileo-cæcal valve* is very dark in color; there is aphthous deposit on it; the *colon* is in the same state as the *cæcum*, and contains a bloody plug; the *rectum* is slightly congested at its anal portion; the *liver* is enlarged and contains a very large cyst; there is a large tubercular deposit in the right lobe; the *gall-bladder* is distended with Burgundy-colored bile; the *kidneys* are slightly congested.

The *posterior nares* are congested and tumid; the *larynx* is very slightly congested; the upper and lower portions of the *trachea* are congested; there is a cyst in each *lung* in the lower lobes; the right lung is considerably smaller than the other; both are generally congested. Respiratory system.

There are patches of congestion at the root of the pulmonary artery; the *heart* is very flabby; the wall of the *right ventricle* is very thin. Circulatory system.

Brain not examined. Nervous system.

The *calf* shows faint congestion of the fourth stomach, and portions of the small intestines are faintly congested; the *pericardium* is much congested at the apex. Reproductive system.

No. 39.

A cow (8 *years old*), *examined at Bhickshennee* 21*st April* 1870.—*Dead* 10 *hours*; 5 *days ill.*—*Condition, poor.*

No *skin* eruption; the *vagina* is congested, and there is a sticky discharge from it. Cutaneous system.

There are excoriations on the lower *gum*; the *buccal papillæ* are congested and covered with aphtha at the root; the *hard palate* is aphthous posteriorly, and there are excoriations upon it; there is aphthous deposit and excoriation beneath tip of *tongue*; root in the same condition; dorsum furred; the *pharynx* is tumid, congested, and there are aphthous spots; the *œsophagus* is slightly congested, covered with aphthous mucus; the *rumen* and *reticulum* are congested; the *omasum* shows patches of congestion; the *abomasum* is highly congested, at the pylorus very much so, and there is here an orange-colored aphthous deposit; there are spots of claret-colored congestion visible, and on removing the orange-colored aphtha, there are dots of bright congestion seen; the *duodenum* is in a similar condition, much thickened from submucous hæmorrhage; the thickening is very evident in transverse patches; the *small intestines* are congested, and show mushroom-like deposits; the *solitary glands* are enlarged; *Peyer's patches* are healthy; the *mesenteric glands* are somewhat enlarged, containing greyish material; the *cæcum* is contracted, thickened, and congested; there are reticulæ and stripes of black pigmentary-looking matter extending into the *colon*, which is much in the same condition; the *rectum* is congested; there are faint longitudinal striæ on its mucous membrane; the *liver* is healthy; the *gall-bladder* is distended with coffee-colored bile; the mucous membrane is thickened and congested; a few greenish aphthous-looking spots are visible on it, leaving on removal a bright excoriated-looking surface; the *kidneys* are slightly congested; their basins are congested; the *urinary bladder* and *urine* are healthy; *spleen* healthy. Digestive system.

The *posterior nares* are tumid, dark in color, and covered with thick mucus; the mucous membrane of the *larynx* is tumid, much congested; the *trachea* is much congested; there are patches of deeper congestion; the tube is filled with froth and aphthous looking mucus; there is congestion in longitudinal striæ; the *pleuræ* are slightly congested in patches; there are vascular fringes; the *lungs* are congested; there is interlobular emphysema, and collapse of lower lobe; there is a pill-box cyst in upper lobe of the *right lung*. Respiratory system.

Pericardium slightly injected; there are vascular fringes at the root of the pulmonary artery; there are also a few spots of subserous hæmorrhage at the base of the ventricles externally; the right ventricle contains a small quantity of dark blood; the lining membrane is somewhat injected; the left ventricle is empty; the lining membrane is a little thickened. Circulatory system.

Brain not examined. Nervous system.

No. 40.

A bull-calf (*one and a half year old*), *examined at Humeerpore* 29*th April* 1870 *at* 3 *p. m.*—*Died last night.*

[Last November this calf had an attack of *matak*; recovered, but ever since has remained in a weak state. It has been very ill during the last four days, and has evidently been purging.]

Post-mortem appearances.

On the folds of the mucous membrane of the *abomasum* there are a few brown ochre-colored spots, and the folds themselves are of a darker color than usual, presenting a slaty

hue. In the *duodenum* there are two or three black slate-colored patches seen, and in the *cœcum* and *colon* very many large spots of slate-colored pigmentary matter occur. Throughout the *small intestine* small pigmentary spots are seen, and the coats of the entire intestinal canal are much attenuated and very pallid. The ochre-colored spots on the *large intestines* are probably old cicatrices.

Note.—The Collector of Humeerpore, in a demi-official letter to Mr. Hallen, confirmed the fact that this was an old case of rinderpest.

No. 41.

A cow (8 years old), examined at Bunnee 11th May 1870 at 6-30 p. m.—Dead 9 hours; alleged 4 days ill.

[This animal was seen by the Commission on the 10th at Paharpoor in a dying condition.]

Cutaneous system. No *skin* eruption; muzzle dry and fissured; very viscid discharge from eyes and nostrils; caked on the lips and cheek.

Digestive system. Mucous membrane of *mouth* very much congested; excoriations on gums, lips, and buccal membrane, with aphthous deposit; there are also excoriations on the *hard palate;* a most offensive odour proceeds from the mouth; the *soft palate* is covered with aphthous deposit; there is swelling, excoriation, and submucous hæmorrhage; the root of the *tongue* exhibits aphtha and excoriations; the upper part of the *œsophagus* shows patchy congestion, and here and there aphthous deposit; there are vascular fringes on the surface of the *omentum*; the *rumen* is congested; this is particularly well marked on the muscular bands; the *reticulum* is very slightly congested; the folds of the *omasum* are congested in patches; they are here and there perforated; but these are evidently not recent; they look as if they were congenital, but one of the shorter folds has a hole through it almost as long as itself, and this orifice seems to be the result of recent disease; at one corner it is in the process of healing; the *abomasum* is deeply congested, and the mucous membrane is of a dark color; the folds are here and there of a slate color; the *pylorus* and *duodenum* are in the same state; there is a thin layer of aphtha here and there; all the stomachs contained the usual amount of food; there is a plug in the *duodenum;* on removing the aphtha off the mucous membrane a patch of very dark color is seen, and at the pylorus slight excoriations are noticed; the *small intestines* are generally congested to a slight extent; the congestion being in minute patches all over the surface of the bowel; *Peyer's patches* are deeply congested, and have a very thick layer of aphtha (¼ inch) all over the surface; throughout the whole bowel mushroom-like aphthous deposits are seen, which on being removed have deep spots of congestion; the *cœcum* is very much constricted, deeply congested, and of a bright claret color at its blind end; there is submucous hæmorrhage, and grey striæ are seen giving a reticulated appearance to the surface; here is a plug of yellowish mucus in this bowel; the *colon* is in a similar state; the *rectum* is slightly congested; there are minute spots of congestion seen on the surface; the *liver* is congested, soft, and friable; the *gall-bladder* is constricted, and holds a small amount of dark coffee-colored bile; there are mushroom-like aphthous deposits on the mucous membrane, which on being removed leave bright red spots of congestion; the spleen is slightly congested, and there are minute spots of congestion on the peritoneal surface, the *kidneys* are congested; the membrane lining the pelvis is congested in streaks; the *urinary bladder* is congested in patches, which are slightly tumid.

Respiratory system. The *posterior nares* are tumid, and the membrane is covered with a dense layer of aphtha; the *larynx* is deeply congested, and here and there is a thin pellicle of aphtha; the whole of the windpipe is in a deeply congested state, and here and there streaks of darker color are seen; the *lungs* show very slight interlobular emphysema; the *bronchi* are full of frothy mucus; the lungs are congested, and the upper lobes are collapsed.

Circulatory system. There are spots of congestion at the root of the pulmonary artery; the *heart* is flabby; both ventricles are empty, and do not exhibit any congestion.

Nervous system. The *dura mater* is healthy, and the *pia mater* is very slightly congested; the *lateral ventricles* contain no serum; the *choroid plexuses* are engorged; the substance of the *brain* is healthy; there is a vascular fringe or off-shoot of the *pia mater* beneath the *cerebellum;* the *medulla oblongata* is healthy.

No. 42.

A buffalo, examined at Paphoond 16th May 1870.—Died at Sianuggur on the previous night.

[This animal was the property of one Sewchand, zemindar; the animal was in calf; the fœtus, on examination, was found to have a very faint congestion of the mucous lining of the fourth stomach.]

Digestive system. There are excoriations of the buccal membrane and corners of *mouth;* none on *gums;* vascular fringes are seen on the *omentum;* the *rumen, reticulum,* and *omasum* are congested;

the latter more congested than the others; the *abomasum* is highly congested, the folds being of a slate color, and showing here and there aphthous ulcers; at the pylorus the congestion is most intense, but here there is not much aphtha, a thin pellicle only being seen here and there; the *small intestines* are extremely thickened and congested, are of a uniform livid color, and contain blood and mucus in intimate mixture; the mucous membrane is dotted with numerous patches of aphthous-looking material, on scraping which it is found that the aphthous matter has formed at the expense of the mucous membrane, which is here totally destroyed, these patches constituting in fact patches of irregular form and varying size; *Peyer's patches* are completely destroyed and supplanted with this aphthous growth; the *cæcum* is very much constricted, containing a small amount of muco-sanguineous fluid; mucous membrane very dark in color and much thickened from submucous hæmorrhage; *colon* in the same condition; *liver* soft and clay-colored; *gall-bladder* very much distended with dark-green colored bile.

The *lungs* are very much congested, and in some portions hepatized; there is also inter- Respiratory system.
lobular emphysema.

The lining membrane of the *heart* is slightly congested; on the surface of the heart there Circulatory system.
are very many spots of ecchymosis, especially on the right side; both cavities are distended with inky clots; there is also a small quantity of fibrinous clot in the right ventricle.

[*Note.*—As Mr. Hallen was returning from the village Terria he came upon this carcass, which was being skinned by chamars. He had the corpse eviscerated, and the above was the result of a more minute inspection at the staging bungalow than could have been made in an open field at 10 a. m.]

No. 43.

A cow-buffalo, examined at Agra 20th May 1870 at 6 a. m.—Died 19th May 1870 after 17 days' illness.

There is a pocky eruption on the back and ribs, and *œdema* of the extremities; the Cutaneous system.
vagina is deeply congested.

There are excoriations on the *gums* and *buccal membrane*, and ulceration of a honey- Digestive system.
combed appearance; the incisor teeth are loose; the *soft palate* is deeply congested and thickened from submucous exudation; there are vascular fringes on the *omentum*; the *reticulum* is congested; the folds of the *omasum* are deeply congested and perforated; there are ulcerated borders to these, with an aphthous deposit upon them; the *abomasum* has a livid color internally; there is a thick aphthous deposit on the borders of the folds; the *duodenum* is in a similar condition, but the amount of aphtha is very small; the mucous membrane is very much thickened, deeply congested, and in some places of a livid color; the membrane has in some places been totally destroyed by aphthous ulceration, and presents an uneven and ragged surface; the *small intestines* contain little or no food; their mucous membrane is extensively invaded and destroyed by aphthous ulceration; *Peyer's patches* are also destroyed by aphthous ulceration; in some places the ulceration extends to the peritoneal coat; the mucous membrane of the *cæcum* is much ulcerated; the ulcers are so many as to present a honeycomb-like appearance, and they are all covered with a pellicle of aphtha; the *rectum* is deeply congested; *liver* much congested; the *gall-bladder* is distended with coffee-colored bile; its mucous membrane is much thickened, and shows very many deposits of aphtha; the *kidneys* are deeply congested and claret-colored; they are soft and friable in texture; the mucous membrane of the *pelvis* is deeply congested.

The membrane of the *posterior nares* is tumid and congested, covered also with an Respiratory system.
aphthous deposit; the *epiglottis* and borders of the entrance to the *larynx* are tumid and rounded; the entire lining membrane of the latter is very much thickened and deeply congested; the tumidity causing a considerable diminution of the calibre of the tube; here and there is a thick pellicle of aphtha; the *lungs* are much congested, and in some places hepatized.

The right cavity of the *heart* contains a small clot, black and treacly; there are two or three Circulatory system.
patches of subserous exudation; there is none in the left cavities.

Brain not examined. Nervous system.

No. 44.

A male buffalo, examined at Futtehpore 25th May 1870.—Dead a few hours; had been ill 14 days.

The *lips*, *gums*, and *buccal papillæ* are congested; the point of the *tongue* has been eaten Digestive system.
by some animal; *pharynx* and root of *tongue* tolerably healthy; there are patches of congestion in the *œsophagus* of some days' standing; there are vascular fringes seen on the *omentum*; the *rumen* is congested; cuticular lining of a black color; the *reticulum* is slightly

congested; the folds of the *omasum* are perforated in many places, the rents and perforations being of various sizes; the mucous membrane of the *abomasum* is congested, and there are stripes of submucous exudation; contents of a greenish color; there are aphthous patches towards the pylorus, leaving on removal a raw deep claret-colored surface; the adhesion between the aphtha and surface is intimate; the pylorus is considerably thickened from submucous exudation; the *duodenum* is congested and a little thickened; the mucous membrane of the *small intestines* is much thickened, and possesses the color of a thin solution of Indian ink; here and there *Peyer's patches* are easily recognized from their being covered with a thick layer of gamboge-colored aphtha, which adheres closely; there are numerous dots and patches of aphtha throughout the whole gut; there is a slate-colored reticulation seen in the *cæcum;* there are aphthous dots and patches, removed with difficulty; there is a commencement of honeycombed ulceration; the *colon* and *rectum* had been eaten by jackals and crows; *mesenteric glands* somewhat enlarged and pigmented; the *liver* is congested, soft, and friable; *gall-bladder* distended with coffee-colored bile; there are dots of aphtha on its mucous membrane; *kidneys* considerably congested; *pelvis* not so; *spleen* healthy.

Respiratory system. Mucous membrane of *nares* tumid, covered with aphthous-looking clots; on the back and edges of the *arytenoid cartilages* and along the vocal cords a dense and adhesive layer of aphtha exists, extending also along the edges of the *epiglottis;* the *larynx* is congested and somewhat tumid; the *trachea* is very slightly congested in stripes; the *lungs* are congested, and exhibit subpleural and interlobular emphysema.

Circulatory system. There are patches of congestion in the *pericardium* and a few vascular fringes at its reflection; the right cavities of the *heart* contain a small quantity of black tarry clots; lining membrane healthy; left cavities healthy; there are traces of adhesion between *pericardium* and outer surface of *heart.*

[*Note.*—This animal was eviscerated by the veterinary assistant 14 miles from Futtehpore. The viscera were conveyed into Futtehpore and examined by the Commission with the result above recorded.]

No. 45.

Bullock (4 years), examined at Secrole, Benares, 30th May 1870 at 5 a. m.—Dead 17 hours.—Condition, good.

History. [Died after an illness of 21 days. The owner, who is present, states that the animal refused food, had great thirst, discharge from eyes, nose, and mouth, offensive breath, and purged blood and mucus; the ears were drooping; there was no eruption on the skin.]

Cutaneous ysstem. There is general subcutaneous emphysema and congestion, except over the walls of the abdomen; the *prepuce* and point of the *penis* are lined with a layer of orange-colored aphtha, which is easily removed, leaving a congested and somewhat tumid mucous surface.

The *buccal papillæ* are congested, and at the corners of the mouth slight excoriations are seen covered with a very thin layer of aphtha; the *tongue* is very much furred; on each side of the base is found a dark patch of congestion, which is covered by a layer of material, partly mucus and partly aphtha in character; the *pharynx* is tumid and congested. The cavity of the *peritoneum* contains a considerable quantity of dark sanguineous serum; membrane generally congested; there are vascular fringes on the *omentum;* the *lesser omentum* shows larger and better marked vascular fringes; there is an abscess found between the first and fourth stomachs, evidently of some standing. (This was discovered after a careful search for perforation of fourth stomach, as the peritoneal inflammation is traceable to serous exudation between the folds of the *omentum;* but instead of finding the stomach perforated, this abscess, which had recently given way and caused general peritoneal inflammation of the abdomen, was discovered.) The *rumen* is much distended with flatus; walls congested in patches; the *reticulum* contains food drier than usual; the walls are congested, principally in the peritoneum, but there is also subcuticular exudation; *omasum* contains soft food, and there is very slight congestion of folds; the *abomasum* is very much congested externally; internally the mucous membrane is tumid and congested; the free borders of the folds are tumid, rounded, and baggy; there are spots and patches of intense congestion, and in some places submucous hæmorrhage, these varying in size from a pin point to the size of the palm of the hand; the color of the membrane varies from a bright claret to a deep port; there are a few flocculent aphthous patches adhering loosely to the mucous surface, and leaving, on being scraped off, an aphthous ulcer extending to the peritoneal surface; the *duodenum* is covered with spots of orange-colored aphtha in patches, very adherent, and leaving bright claret-colored patches of an excoriated character; elsewhere the mucous membrane is tolerably healthy; the whole of the *small intestines* show the following symptoms: no general submucous exudation, but deep congestion and an aphthous condition of *Peyer's patches,* and mushroom-like deposits on the *solitary glands;* the *cæcum* shows more general aphthous deposit, consisting of a thin pellicle over the whole mucous membrane, which is covered with dots and spots of congestion when the aphtha is removed; the *colon* is healthier as the dissection proceeds; some parts of the *colon* show striated pigmentary lines;

the *rectum* is healthy; there is fatty degeneration of the *liver*, whose texture is soft. and friable; the *gall-bladder* contains a small quantity of inspissated bile; the mucous membrane shows aphthous dots and congested patches; the *spleen* is congested, and on the peritoneal coat there are a few vascular fringes; the *kidneys* are congested and somewhat decomposed; the mucous coat of the *urinary bladder* is slightly thickened; about one-half of it shows a mottled congestion; at the fundus there are very many bright claret-colored dots and small patches of congestion.

The *larynx* is tumid and very much congested; there are one or two spots of aphtha covering a very deeply congested surface; the commencement of the *trachea* is deeply congested; there are stripes of aphtha and deeper congestion; the rest of the tube is also deeply congested; the *pleuræ* are much congested; there are a few vascular fringes on the membrane; *lungs* are deeply congested throughout, and in some places there is interlobular emphysema. Respiratory system.

There are patches of bright claret-colored congestion on the inner surface of the *pericardium*; there is sanguineous serum within the pericardial sac; on the surface of the *heart* there are innumerable dots of subserous hæmorrhage; there are small tarry clots in the right cavities; the left cavities are healthy. Circulatory system.

Brain, &c., not examined. Nervous system.

[*Note.*—Veterinary Surgeon Lemon, R. H. A., witnessed this dissection.]

No. 46.

Bullock (12 *years old*), *examined at Secrole, Benares*, 1*st June* 1870.—*Dead* 24 *hours.*

[*Notes recorded on* 30*th May.*—A bullock, 12 years old; condition good; ten days ill; purging mucus and blood; breath offensive; profuse discharge from eyes and mouth; muzzle dry, reticulated, and fissured; much subcutaneous effusion around eyes; animal lying down, looks stupid, is very weak; off feed, but has great thirst; excoriation on angles of mouth and on buccal papillæ; forced breathing; faint eruptions on cheeks; died on the 31st May.] History.

The carcass was greatly decomposed, and permitted only of a partial examination, the notes of which, recorded at the time, are as follows:—

There is a slight eruption on the neck; the gums are congested, and slightly excoriated around the edges; there is extensive aphthous ulceration of the buccal membrane; the *second stomach* is slightly congested; there are patches of congestion on the *omentum*; there is aphthous ulceration and perforation of folds of the *omasum*; the *abomasum* is highly congested, livid along the edges of the folds; there are dark patches of congestion around the pylorus, of the color of port wine; the *small intestines* are generally congested, but there is no submucous extravasation; the whole lining of the bowel is covered with patches of aphthous ulceration; *Peyer's patches* are in a state of total disorganization, a layer of aphtha marking their site; the *cæcum* and *colon* are comparatively healthy, but there is aphthous ulceration of the upper portion of the *cæcum*; there is interlobular emphysema of the *lungs*. *Post-mortem* examination.

No. 47.

A bullock, examined at Pandaypoor, 1*st June* 1870, *at* 7-15 *a. m.*

[Was in health, and working the whole day, yesterday, pulling water out of a well; had its usual food (*boosa*) at noon. At an hour before nightfall it was coming home; it fell down on the way, and was brought home on a charpoy. It never got up after this, and died at midnight.] History.

The result of *post-mortem* examination was as follows:— *Post-mortem* examination.

Condition fair; stomach and intestines very healthy; *rumen* much distended with gas; lungs congested, and in some places collapsed; the nostrils are filled with frothy mucus.

[*Note.*—The animal seems to have died from hoven and asphyxia.]

No. 48.

A cow (6 *years old*), *examined at Belowree, Shahabad*, 10*th June* 1870.—*Dead* 2 *hours; alleged* 4 *days ill.*

[This animal was seen by the Commission on the 9th, when the following notes were taken:—Condition fair; three days ill; off feed; great thirst; ears drooping; coat staring; excoriation on hard palate, floor of mouth, around opening of sublingual ducts, and on gums; buccal membrane much congested and tumid; muzzle reticulated; eyes semi-closed, œdematous; mouth hot; tongue furred; vagina deeply congested; around vulva the skin is tumid, and on opening the lips aphtha is seen. The animal is in calf.]

No *skin* eruption. Cutaneous system.

Digestive system. There are excoriations of the buccal membrane at the angles of the *mouth*; other parts of the buccal membrane look healthy, except that there are slight excoriations under the two corner incisors; there are excoriations on the posterior part of the *hard palate;* there is also one excoriation anteriorly; the *soft palate* is comparatively healthy; there are two slight excoriations at the base of the *tongue*, and there are several claret-colored spots of congestion on the soft palate; the *œsophagus* is healthy; the *rumen* and *reticulum* are congested; there is a patchy congestion of the folds of the *omasum*, the shorter folds being more congested than the longer folds; one of the latter has two large perforations, the margins of which look as if *not quite healed* (specimen preserved); the *abomasum* is much congested, and at the pylorus excoriations and spots of submucous hæmorrhage are seen; the *duodenum* is congested and tumid; spots of aphtha are seen on the surface of its mucous membrane, adhering closely, and leaving on removal a congested patch; no ulceration is seen; the *small intestines* are comparatively healthy; their coats are not thickened; *Peyer's patches* are not affected, and the *solitary glands* are healthy; only here and there slight congestion around them; the *cœcum* is much constricted, and the coats are much thickened from submucous hæmorrhage; the contents are scanty, greenish, and mucous; there are spots of congestion all over the surface, and here and there pigmentary striæ; the spots of congestion are elongated and run in the direction of the longitudinal fibres; the *colon* is in much the same state; but the patches are of longer standing, being of a dark slate color; here and there striæ are observed, arranged somewhat reticularly; the *rectum* is congested and thickened; the *liver* is congested throughout; the *gall-bladder* is distended with dark coffee-ground-like bile; there are starry patches of congestion on the lining membrane; the *spleen* is slightly congested; its surface is covered with dots of congestion: these dots are star-like in appearance; the *kidneys* are congested, and the membrane lining the pelvis thickened, and showing a reticulated congestion.

Respiratory system. The mucous membrane of the *posterior nares* is very tumid, and there is aphthous-like deposit on each side of the central ridge; the *larynx* is quite healthy, with the exception of three or four well-defined aphthous ulcers on each side; the *trachea* is slightly congested anteriorly; the congestion is of a bright lake color, covered with a pellicle of gamboge-colored aphtha, and on removing this aphtha, the mucous membrane is found of a darker hue; on slitting up the *trachea*, aphthous patches are found at the bifurcation with congestion, and a large quantity of frothy mucus; the *pleuræ* are healthy; the *lungs* are emphysematous; the emphysema is both inter, and intralobular, and subpleural and very general; the surface of the *lung* presented the appearance of mosaic-work, some lobules being exsanguine and emphysematous; others in different states of congestion, from a light pink to a dark-claret color; on section, the *lungs* are seen to be brightly congested.

Circulatory system. The *pericardium* is generally healthy; there are very well developed vascular fringes at the reflection of the membrane over the root of the pulmonary artery; these fringes are completely tassel-like, and are the best examples hitherto seen of this morbid feature; there are spots of congestion at the base of the ventricles externally; the cavities of the heart contain small quantities of black blood, partly clotted; lining membrane healthy.

Brain not examined.

Reproductive system. A calf removed from the uterus of the above presented the following appearances:—There is congestion of the soft palate, molar gums, and buccal papillæ; the *abomasum* is congested; the ridge of the folds is of a bright pink color, and between the folds is a layer of thick, muco-aphthous-looking matter; the *small intestines* are congested, and on close examination the mucous membrane is found to be covered with a reticulation of dilated vessels; the *large intestines* are also much congested, and contain clots of aphthous-looking material; the *liver* is intensely congested; the mucous membrane of the *gall-bladder* is congested; the interior of the *kidney* presents an aphthous-looking deposit; the apex and right side of the *heart* are deeply congested; the whole lining of the *vagina* is deeply congested.

No. 49.

Buffalo-cow (10 *or* 12 *years old*), *examined at Bolundshahar*, 14*th July* 1870.—*Dead* 12 *hours.*

[This animal was seen at the village of Yakoobpoor on the 13th, when the following notes of its condition were taken:—Has been 8 days ill, and shows well marked symptoms of *rinderpest* (locally called *bedun*), especially the aphthous ulceration of the gums and buccal membrane; the nose is covered with a viscid discharge, and flies.]

Post-mortem appearances.

Digestive system. The *omentum* is covered with vascular fringes; the *rumen* and *reticulum* are healthy; the folds of the *omasum* are deeply congested; the folds of the *abomasum* are tumid, and there is submucous extravasation; the mucous membrane has a deep violet color, which is not uniform; the membrane on being washed presenting a deeply congested surface with innumerable violet-colored patches; the congestion at the pylorus is still better marked, and the membrane is covered with a thin pellicle of aphtha; the *small intestines* are compara-

tively healthy, but here and there the mucous membrane has a mottled appearance; the contents are scanty; the surface is covered with a viscid bloody mucus, and there are excoriations here and there, some of them covered with aphtha; in some places, however, there is deep congestion with considerable tumidity, from submucous hæmorrhage, and aphthous material is here discerned, either adherent or floating; *Peyer's patches* are raised, the surface is excoriated and covered with a creamy aphthous deposit; the *cæcum* is considerably thickened by submucous hæmorrhage; there are grey striæ of a deep color, and the entire mucous membrane is covered with a pellicle of aphtha, on removing which the surface appears to be excoriated; the *liver* is congested both in its substance and on its peritoneal surface; *spleen* healthy.

The *larynx* and *trachea* are slightly congested; the *lungs* exhibit inter and intralobular and subpleural emphysema, giving the organs a beautiful marble-like appearance; the *lungs* are more or less congested, and here and there there is red hepatization. Respiratory system.

There is subserous congestion at the root of the pulmonary artery and aorta; the walls of the *heart* are thin and flabby. Circulatory system.

No. 50.

A buffalo-cow (3 *years old*), *examined at Dhanoura* (*Haupper*), 28*th July* 1870; *dead* 1 *day*.—8 *days ill.*

The *gums* and *buccal membrane* are excoriated; the *rumen* and *reticulum* are healthy; the *omasum* is congested; the *abomasum* is highly congested, but there is no aphthous deposit; the contents of the *abomasum* and small intestine are pultaceous, yellow in color, and mucus-like; the *small intestines* exhibit a general congestion, and dots and patches of deeper congestion are seen, depending upon submucous hæmorrhage; the solitary glands are enlarged, and Peyer's glands raised, tumid, and covered with a pellicle of aphtha. [The large intestines had been removed by jackals and dogs]. The *liver* is in a state of fatty degeneration; the *gall-bladder* is distended with coffee-colored bile, and the mucous membrane is congested in patches and streaks; the *kidneys* are congested. Digestive system.

The lungs are slightly emphysematous. Respiratory system.

There is a large patch of subserous hæmorrhage on the external surface of the heart and numerous small patches internally opposite the external patch. In the left ventricle subserous extravasation is more extensive than in any other case hitherto seen. The condition is more pronounced than is depicted in the third report of the English Cattle Plague Commission, Plate 21, Dr. Bristowe's Paper); muscle of heart bloody-looking. Circulatory system.

No. 51.

A buffalo-cow (5 *years old*), *examined at Raree* (*Seharunpore District*), 2*nd August* 1870; 16 *hours dead.*—6 *or* 7 *days ill.*

No cutaneous eruption. [The owner states that the animal had been passing blood and mucus for two days before death.] Cutaneous system.

There are excoriations and aphthous deposit on the *gums* and *buccal membrane*; the *rumen* and *reticulum* are healthy; the folds of the *omasum* are congested in streaks and patches; the congestion is more streaky than patchy; there are several aphthous deposits found on the folds, but no perforation; the mucous membrane of the *abomasum* is deeply congested, the color varying from a light-pink to a dark plum; there are aphthous flakes floating in the scanty liquid contents, and many floccules of aphtha are found still adhering to the mucous membrane, although the organ, in common with the rest of the carcass, is more or less decomposed. These adhering floccules are more numerous at the pylorus. The *duodenum* exhibits the same appearances as the pyloric portion of the abomasum; other parts of the *small intestine* show similar marks of disease; the *solitary glands* are enlarged, and *Peyer's patches* are not so diseased as they are generally found to be; the *cæcum* and *colon* exhibit deep congestion with submucous extravasation, which is seen especially in the *cæcum* in streaks running in the direction of the transverse and circular mucular fibres, giving an appearance to the membrane like black marble; the *rectum* is also congested, and shows more longitudinal than circular striation of submucous hæmorrhage. Digestive system.

The *lungs*, *heart*, and other organs were too far decomposed to permit of examination. Mr. Oliphant, Veterinary Surgeon of the Seharunpore Stud Department, assisted at this examination.

No. 52.

A bullock, examined at Loodianah, 5*th August* 1870; 8 *days ill.*

There is only one aphthous ulcer observable in the *mouth*, and this is cicatrizing; the *tongue* and *larynx* are healthy; on close examination, 10 or 12 fissures are seen on the Digestive system.

dorsum of the tongue; they are cicatrizing, and aphthous deposit is found on the floor of each fissure; there are no vascular fringes found on the omentum; the *rumen* and *reticulum* are slightly congested; the folds of the *omasum* are perforated with very many small holes and long rents; the holes vary in size from that of a pea to a bean, and the rents are from 3 to 9 inches long (specimens preserved). The *abomasum* is of a bright plum color internally; the folds are darker in color; the whole mucous membrane is congested, and here and there are patches of the size of a pea, and streaks from 1 to 1½ inch long of submucous exudation; the cardiac portion of the organ shows several patches of a dark color; these are congested, and on their surface is a thin pellicle of aphtha. The *small intestines* are congested, and the surface of the mucous membrane uneven from submucous hæmorrhage; water does not remove the very viscid yellowish-green mucous covering the membrane, and when this is scraped away, the surface is found patchy and streaky with congestion; the *solitary glands* are enlarged; *Peyer's patches* are slightly tumid; there is no aphthous deposit found in the small intestine; the contents are scanty and of a muco-purulent nature; the mucous membrane of the *cæcum* is congested, streaky, and mottled with striæ; there are one or two aphthous patches; the whole of the mucous membrane is covered with viscid material of a muco-purulent nature; the *colon* is in a similar state; the *liver* is much diseased, contains numerous cysts (specimens preserved); the cysts are those of *echinococcus polymorphus or veterinorum;* the *gall-bladder* is deeply congested internally and of a bright plum color; there is one small patch of aphtha; the *kidneys* are slightly congested, and there is calcareous matter in the pelvis.

Respiratory system. The *lungs* are beautifully marked with interlobular and subpleural emphysema.

Circulatory system. The muscular tissue of the *heart* contains many cysts (cystocercus cellulosæ); the fibre is soft, pallid, and flabby.

No. 53.

A buffalo cow, examined at Shaikoopoorah (Goojranwallah District,) 16th August 1870.

[This animal exhibited well-marked symptoms of an advanced stage of pleuro-pneumonia, and was purchased for the purpose of performing a post-mortem examination.]

Digestive system. The *rumen* is healthy; the *reticulum* is also healthy, but the walls of many of its cells are pierced by thorns of the *babool* tree (mimosa arabica); the *solitary glands* are congested and tumid; the mucous membrane of the entire intestinal canal is here and there congested (causing doubtless diarrhœa). One of Peyer's patches is found deeply congested and covered with aphthous deposit of the size of a bean; the *liver* is healthy, but a little soft in texture; the *spleen* is healthy.

Respiratory system. Both *lungs* are partially adherent to the parietes of the chest, and in a state of grey hepatization, with here and there red hepatization (specimens preserved); The heart is saft

Circulatory system. the fat at its base is pale and jelly-like; both ventricular walls are remarkably thin, but firm in texture.

No. 54.

A cow (4 years old), examined at Koralie (Montgomery District), 25th August 1870; *5 days ill; 8 or 10 hours dead.*

Cutaneous system. There are eruptions all over the body, especially on the udder; there is desquamation of cuticle on the body; the eruption on the udder appears to have been vesicular, and is now dry and scab-like.

Digestive system. There are excoriations and aphthous deposit on the *gums, buccal membrane,* and hard palate; the tongue is very much furred, and the soft palate deeply congested; the *rumen* is congested; the *reticulum* is also congested, but the congestion in both cases is partial; the *omasum* has on its folds a streaky congestion; the mucous membrane of the *abomasum* is congested throughout, especially on the edges of the folds, and covered with dots of aphtha of the size of small peas; the *duodenum* is much in the same state, but the aphthous deposit is in patches of the size of large beans; the congestion of the *abomasum* and the *duodenum* is not very deep in color; the *small intestines* are congested; *Peyer's patches* are raised, deeply congested, and covered with a thick layer of aphtha; the mucous membrans is congested throughout, and dotted with mushroom-like aphthous deposits; the mucous membrane of the *cæcum* and *colon* is congested, but there is no aphthous deposit seen; the *rectum* had been removed by dogs; the *liver* is degenerated, clay-colored, and contains cysts; the *gall-bladder* is distended with thick coffee-like bile, and on opening it, the coats are found to be much thickened, and the mucous membrane is entirely covered with a thick layer of aphthous which has been stained of a coffee-color by biliary pigment (specimen preserved); the *spleen* is congested; the *kidneys* are congested, as also the mucous membrane lining the pelvis.

Respiratory system. The *larynx* is deeply congested, also the upper part of the trachea: the edges of the larynx are of a deep plum color; there is aphthous deposit on the borders of the glottis and covering

all the folds of the mucous membrane; on removing the aphtha, the mucous membrane is found to be of a deep plum color; the *lungs* are emphysematous; there is intra and interlobular and subpleural emphysema throughout.

On opening the *pericardium*, its internal surface is found generally congested, and two or three vascular fringes are seen on the surface of the heart; the surface of the ventricles and auricles are deeply congested; on the left auricle are two aphthous-looking patches about the size of a small bean; the *blood-vessels* on the surface of the heart are generally gorged. with black treadey blood, and around the larger vessels there is extensive subserous hæmorrhage On the right auricle there is a dark patch of subserous extravasation, also on the left auricle; the right cavities are filled with a dark treacley, all but inky clot of blood, which on being removed preserves the shape of the lining membrane as from a mould; the lining membrane of both cavities is deeply stained; the left cavities contain a similar but smaller clot; the lining membrane is not stained; there are two or three patches of subserous hæmorrhage; the *aorta* also exhibits several dots of subserous congestion, especially close to its junction with the left ventricle. Circulatory system.

No. 55.

A bullock (6 *years old,*) *examined at Kamalia* (*Montgomery District*), 29*th August* 1870; 10 *days ill,* 45 *minutes dead.*

No *skin* eruption; the *prepuce* is deeply congested; mucous membrane plum-colored, and covered with a thick aphthous layer. Cutaneous system.

There are excoriations and abundant aphthous deposit on the *gums* and *buccal membrane*; the *hard palate* and *glottis* are in the same condition, and on removing the aphthous layer, a dark plum-colored surface is exposed with more or less excoriation; there are vascular fringes on the surface of the *omentum*; the *rumen* and *reticulum* are congested, and the *omasum,* but not to the same degree; the *abomasum* is much congested, and here and there are aphthous ulcers. At the pyloric and cardiac orifices, there is deeper congestion, and more aphtha in large patches (specimens preserved); the mucous membrane of the *duodenum* is much congested, and there are numerous patches about the size of a sixpence; the *small intestines* are more congested throughout; the contents are scanty, consisting of viscid mucous material; the *solitary glands* are tumid, as also Peyer's patches; there is no aphthous deposit; the *cæcum* is slightly congested, and there are a few pigmentary striæ; the *colon* is more congested, and there are many patches of aphtha on the surface; the mucous membrane of the *rectum* is also congested and slightly aphthous; the *liver* is clay-colored from fatty degeneration, and soft in texture; the *spleen* has vascular fringes on its surface; the *kidneys* are congested, and the membrane lining the *pelvis* is also congested. Digestive system.

The *larynx* and upper portion of the trachea are much congested, and there is aphthous deposit on the edges of the former. The *lungs* exhibit inter and intralobular emphysema, and are congested here and there to a small extent. Respiratory system.

On the inner surface of the *pericardium* there are vascular fringes; there is no subserous hæmorrhage on the lining membrane of the cavities. Circulatory system.

No. 56.

A buffalo-cow (5 *years old*), *examined at Kamalia* (*Montgomery District*), 30*th August* 1870, 16 *days ill; 12 hours dead.*

The mucous membrane of the *vagina* is congested and aphthous. Cutaneous system.

There are excoriations and aphthous deposit on the upper lip; there is submucous hæmorrhage at the root of the tongue; the surface is plum-colored and covered with aphtha; the mucous membrane of the *hard* and *soft palate* is deeply congested, and here and there there are dark purple spots with excoriations and abundant aphthous deposit; the *omentum* is covered with vascular fringes, and generally red from a congested state of the vessels; the *rumen* is much congested, and there is aphthous deposit; the *reticulum* is slightly congested; the *omasum* is more congested; with aphthous deposits here and there; the *abomasum* is much congested, especially at the cardiac and pyloric portions; there are excoriations here, some covered, and some not covered, with aphtha (cardiac portion preserved). The borders of the folds are not so much congested as is usually seen in severe cases; there is submucous hæmorrhage in the *duodenum,* thickening of the coats, general deep congestion, and a large amount of aphthous deposit in patches about the size of a horse bean. The contents of the *small intestines* are yellow, viscid, mucous, and aphthous-like; innumerable mushroom-like deposits of aphtha exist; the *solitary glands* are tumid, and contain a large quantity of a thick cheesy material; *Peyer's patches* are raised and covered with aphtha, and on removing the excoriated and ulcerated surfaces are seen; here and there aphthous ulceration has all but pierced the wall of the intestine, the peritoneal coat only remaining sound; this is also found in other parts of the intestine. There is an abundance of submucous extravasation in the Digestive system.

large intestines, and an immense amount of aphthous deposit, chiefly adherent to the mucous membrane, but here and there partially detached, and there is some aphthous matter free and floating in the yellowish red-mucous contents of the bowel which are scanty; the *cæcum* and *colon* are one mass of excoriation at the orifice of the *ileo-cæcal* valve, with a thick layer of aphthous deposit; and there is considerable submucous hæmorrhage either in patches or striæ; the *liver* is soft and friable, partly the result of decomposition; the *gall-bladder* is healthy; the *kidneys* are congested, and the mucous membrane lining the pelvis highly so; the *spleen* is slightly congested; the mucous membrane of the *urinary-bladder* is also slightly congested.

Respiratory system. The mucous membrane of the *larynx* is deeply congested, and here and there are dark purple spots with excoriation and an abundance of aphthous deposit. Over and around the borders of the larynx the congestion is, as usual, more deeply marked, and here there is more aphthous deposit, the aphtha constituting a thicker layer, and here there existing as large patches; the *lungs* are much congested, the right lung especially so; there is inter and intralobular and subpleural emphysema seen in both lungs.

Circulatory system. There are patches of congestion on the outer surface of the left ventricle of the *heart*, and vascular fringes on the inner surface of the pericardium; there is a patch of subserous hæmorrhage in the left ventricle, but not in the right; the blood is fluid and treacle-like.

No. 57.

A buffalo-cow (4 *years old*), *examined at Kaka* (*Montgomery District*), 30*th August* 1870; 3 *days ill; about* 6 *hours dead.*

[This animal had a calf which died of rinderpest ten days ago; the value of the animal was estimated at Rs. 80.]

Cutaneous system. There is an eruption on the inside of the thighs; the mucous *membrane* of the *vagina* is deeply congested.

Digestive system. There is congestion of the mucous membrane of the mouth, but no aphthous deposit. On removing the skin of the throat, extensive subcutaneous extravasation is found surrounding the trachea and œsophagus; the base of the *tongue* and the *soft palate* are of a dark-purple color; the mucous membrane of the *hard palate* is of a dark-plum color; there are vascular fringes on the surface of the *omentum;* the *rumen, gall-bladder,* and *liver* are found adherent to the diaphragm, the adhesion being of recent formation; the peritoneal surfaces, on being separated, show a dark-red congested aspect, with shreds and flakes of adhesive material, partially adherent to them; the *rumen* is slightly congested; the *reticulum* is much congested; there are patches of congestion on the folds of the *omasum*. The mucous membrane of the *abomasum* is not much congested, but here and there pea-like deposits of aphtha are found on the surface; the surface of the *duodenum* has a grey marble-like appearance internally from submucous hæmorrhage in striæ, longitudinal and circular, and there is a faint blush of congestion all over the mucous membrane. The mucous membrane of the *small intestines* is generally covered with numerous patches of congestion, evidently of recent formation; there is very little thickening from submucous hæmorrhage; Peyer's patches are healthy, and the solitary glands slightly swollen; there is extensive extravasation of blood between the folds of the mesentery; the *cæcum* and *colon* are blue and grey marble-like in color with striæ from submucous hæmorrhage in every direction, and in the rectum longitudinal striæ only are found; there is no aphthous deposit found in the large intestine; the *liver* is much congested and very soft, giving way under the slightest pressure of the finger; the *gall-bladder* is much distended, and on opening it, gas escapes, and on further laying it open, it is found full of the contents of the *duodenum* chiefly composed of well-digested green grass. The biliary duct was very much enlarged, and had permitted the passage backwards into the *gall-bladder* of the contents of the duodenum; hence the adhesions above described. The contents of the *duodenum* were also found in the substance of the liver; the diameter of the *biliary duct* was about 2½ inches; the *kidneys* are small, black in color, and offensive from extravasated and decomposed blood.

Respiratory system. The mucous membrane of the *larynx* is intensely congested and of a bright plum-color; there is submucous extravasation both in the *larynx* and *trachea;* the *lungs* are very much congested and emphysematous; the *emphysema* is inter and intralobular and subpleural; the pleural surface of the lungs is covered with spots of congestion.

Circulatory system. There are large patches of subserous hæmorrhage on the inner surface of the left ventricle and auricle; the *blood* is dark and treacle-like.

Note.—Although this animal died only about six hours before examination, the kidneys and lungs showed signs of advanced decomposition. This condition was probably due to the disease having been of a most acute and malignant type, and death was doubtless accelerated by the morbid condition of the *gall-bladder*.

No. 58.

Post-mortem examination at Goomti, on the new Siligoree and Darjeeling Road, dated 21st October 1870.

A bullock, 5 years old, 15 days ill, with foot and mouth disease. All four feet showing more or less separation of the hoofs from the sensitive laminæ; clefts ulcerated; legs from coronets to knees much enlarged, œdematous, near fore leg, especially so, and above the knee and amongst the muscles of the arm a great quantity of pus is found; subcutaneous extravasation with œdematous infiltration generally in all four legs; mouth perfectly healthy; first stomach also healthy; second and third stomachs slightly congested; fourth stomach and intestines generally showing dots and patches of ecchymosis; *lungs* slightly congested, but in other respects healthy. This bullock has evidently been a sound and healthy subject, and has died simply from continued work whilst laboring under foot and mouth disease.

No. 59.

A heifer (2 *years old*), *examined at Culna,* 12*th December* 1870.—*Had died during the night, and has been brought for the inspection of the Commission.—Reported to have been* 7 *days ill.—Condition, fair.*

No eruption is observed on the *skin.* Cutaneous system.

The *soft palate* is congested; *posterior nares* are very tumid and dark in color, and there is apthous deposit; the *buccal membrane* and *papillæ* especially are congested, excoriated, and show apthous deposit; the *rumen, reticulum,* and *omasum* are generally slightly congested; on several folds of the *omasum* there are large streaky patches of congestion; the mucous membrane of the *abomasum* is deeply congested and of a red plum-color and mottled with spots of deeper congestion; nearly all the mucous membrane is covered with a thin pellicle of aptha; the aphthous deposit is lightly attached to the more deeply congested spots. When water is gently poured on the mucous membrane, some of the aphtha becomes detached, and is carried off with the stream of water, whilst other portions remain adherent and appear as flocculent fringes in the stream. At the pylorous there are two or three excoriations, and portions of these are covered with dense aphtha; the *duodenum* is considerably thickened from submucous hæmorrhage; the mucous membrane is of a slate color, and mottled with striæ of submucous exudation; the surface is coated with a thick layer of aphtha; the small *intestines* are generally thickened in their walls by submucous exudations; *Peyer's patches* are tumid and covered with excoriations and much aphthous deposit; the *cæcum* is much constricted, and on opening it, masses of aphtha detached from the mucous surface escape with the scanty bloody contents of the bowel; these masses of aphtha have longitudinal and transverse ridges and furrows as if taken from a mould, and have doubtless been so formed by the continued contraction of the muscular coat of the organ; on pouring water over the mucous membrane, there are seen patches of congestion of a bright-red plum color, and stripes of a still darker color; the *colon* presents a very similar appearance, but the aphtha is more adherent and is uniformly deposited on the membrane; the *rectum* is but little affected; the *liver* is congested; *gall-bladder* distended with grumous coffee-colored bile, and the mucous membrane is very much congested, and on its surface are several small patches of aphtha; the *spleen* on its external surface shows many dots of subserous exudation; the *kidneys* are slightly congested; mucous membrane of the *urinary-bladder* is more so. Digestive system.

The *lungs* are generally much congested, some portions being of a dark-purple color, and these portions, when cut into, are gorged with dark liquid blood; interlobular emphysema is also seen in several parts of the *lungs.* Respiratory system.

The external surface of the *heart* is mottled with subserous extravasation, and here and there are dark patches of the same; the right auricle and ventricle are filled with dark semi-liquid blood, and at the attachment inferiorly of the auriculo-ventricular valves are one are two small patches of subserous exudation; the left auricle and ventricle hold blood of the same dark and semi-fluid kind, but no subserous ecchymosis is found. Circulatory system.

No. 60.

A bull calf (1 *month old*), *examined at Culna,* 12*th December* 1870—*Number of days ill, not known; about* 13 *hours dead—Condition, poor.*

There is no eruption on the *skin.* Cutaneous system

The *gums* and the root of the *tongue* and the *soft palate* are much congested; the congestion is in large streaks or patches; the *rumen* shows general congestion to a slight extent, and here and there are patches of congestion of a deeper hue; the *reticulum* is congested to an extent sufficient to give a faint blush to the whole lining, and there are deeper colored patches of congestion from ½ of an inch to 1 inch in diameter; nothing abnormal is found in the Digestive system.

omasum. The entire lining of the *abomasum* is intensely congested, being of a dark-red color, and on the floor between the folds it is of a claret-color; the folds are more or less covered with aphthous deposit, the aphtha at some parts being in a thick layer, and at the pylorous there are several patches of aphtha; the *small intestines* are generally much congested, the mucous membrane being of a portwine color, and covered here and there with aphthous deposit; the *cæcum* is so deeply congested, that the mucous membrane has the appearance of mottled marble of a deep flesh-color, studded with innumerable dots of extravasation; the *colon* is in a similar state; the mucous membrane of the *rectum* is congested to a slight extent, and here are found longitudinal dark-brown stripes of submucous exudation; the *liver* is much congested, so also is the mucous membrane of the *gall-bladder*, which has one spot of aphtha deposited on it; the *kidneys* are likewise congested, and the blood in them is very dark and liquid; the *urinary-bladder* is distended with urine, and the mucous membrane is generally congested, but at the fundus there is a dark patch of congestion.

Respiratory system. The mucous membrane of the *epiglottis* and of the whole of the *larynx* is mottled with congestion; the *lungs* generally are congested, and some portions show red hepatization; there is subpleural exudation in purple patches, and there is also interlobular emphysema.

Circulatory system. The external surface of the *heart* is of a liver color from congestion, the superficial vessels being gorged with dark liquid blood; on the right ventricle are two or three specks of aphthous deposit; the left cavities hold dark semi-liquid blood, but the lining membrane is healthy; the right cavities contain blood in a similar condition, and in the ventricle are found several patches of subserous exudation.

No. 61.

A cow (7 years old), examined at Culna 13th December 1870.—*Dead* 17 *hours; ill* 8 *days.—Condition, fair.*

Cutaneous system. There is no eruption on the *skin*.

Digestive system. The mucous membrane of the *mouth* is deeply congested, and there is much excoriation on the *gums, buccal membrane*, and the *hard* and *soft palates*; there is also considerable aphthous deposit on the gums and buccal membrane; the *rumen, reticulum*, and *omasum* show patches of congestion on their lining membrane, especially so on the folds of the *omasum;* the mucous membrane of the *abomasum* is so deeply congested as to be mostly of a dark-red color, and there are claret patches on the folds; also a considerable amount of aphthous deposit; at the pylorus the mucous membrane is very dark in color, and here is a greater amount of aphthous deposit; the *duodenum* is in a state similar to that of pylorus; the mucous membrane of the *small intestines* is generally much congested; the *solitary glands* are enlarged; *Peyer's patches* are very tumid, and here and there excoriated; aphtha is deposited on the greater portion of *Peyer's patches;* submucous extravasation in the form of dots and patches, varying from the size of a pea to a bean, are seen throughout the *small intestine*, and attached to these innumerable dots and patches of aphthous deposit; the mucous membrane of the *cæcum* and *colon* is of a very dark-red color and much thickened; the usual dark-brown and black stripes of sub-mucous exudation are seen in both bowels, especially the *cæcum;* the *rectum* is not so deeply congested, but mottled with lighter stripes of exudation; the *liver* shows fatty degeneration and is of a clay color; the *gall-bladder* is large and distended with bile, in which is found numerous flocculés of aphtha, and on everting the *bladder* and pouring water over the mucous membrane, the latter is found studded with aphthous patches of the size of a large pea; *spleen* shows signs of congestion.

Respiratory system. The mucous membrane of the *larynx* and upper portion of the *trachea* are of a deep-red color, and there are several purple patches of deeper congestion; the borders of the *epiglottis* are very tumid and rounded, and mucous membrane is mottled; there is considerable congestion of the *lungs*, some portions of the substance containing dark liquid blood; here and there interlobular emphysema is also seen; one portion of *lung* shows signs similar to the first stage of red hepatization.

Circulatory system. On the inner surface of the *pericardium* are several dots of subserous extravasation; similar dots are found on the external surface of the *heart*; the heart itself is very soft and flabby.

No. 62.

A cow-calf (about 2 months old), examined at Culna 14th December 1870.—*Dead about* 6 *hours; ill* 8 *days.—Condition, fair.*

Cutaneous system. No eruption. (The dam of this calf had considerable eruption and recovered.)

Digestive system. *Gums* and *buccal papillæ* are much congested and excoriated; the mucous membrane at the root of the *tongue, pharynx, larynx*, and *posterior nares* is much congested; the *rumen* and *reticulum* show slight congestion; the folds of the *omasum* are also congested, and there is one spot of aphthous ulceration on one fold; the *abomasum* is deeply congested, especially at the

pylorus; the *duodenum* is in a similar state; the mucous membrane of the rest of the intestine shows general congestion; *Peyer's patches* are tumid and of a dark color; *cæcum* is of a purple hue, and has black stripes of submucous exudation; *colon* is in a similar state, and there are two or three small patches of aphthous ulceration; the *rectum* is of the same color and has black stripes of exudation; the mucous membrane of the *urinary bladder* is much congested at the fundus; the *liver* is gorged with dark semi-fluid blood, and the *gall-bladder* is distended with dark coffee-colored bile.

The *lungs* are generally congested, and there is emphysema; on the inner surface of the *pericardium* are one or two patches of subserous exudation. Respiratory system.

[*Note.*—Night arriving prevented further examination.]

No. 63.

A bullock (6 *years old*), *examined at Culna* 17*th December* 1870.—*Dead about* 15 *hours; ill* 4 *days.—Condition, fair.*

The *gums* and *buccal membrane* congested; there is a little aphthous deposit; *tongue* furred, and base of tongue much congested; the *rumen* is healthy; the *reticulum* and *omasum* are very much congested; the *abomasum* is deeply congested, the mucous membrane being of a dark slate color, and there are several patches of aphthous excoriation; *duodenum* is in a similar state; *small intestines* are very much congested; *Peyer's patches* are very much raised; there is a thick layer of aphtha on most parts of them; the *cæcum* shows patches of congestion, but no aphtha; *colon* is in a similar state; the *liver* is soft and congested, and there are several cysts in it; the *gall-bladder* contains a large quantity of inky-colored bile, and there are two or three aphthous dots on the mucous membrane; the *spleen* is congested. Digestive system.

There is general congestion of the *lungs*, and here and there is seen interlobular emphysema. Respiratory system.

Pericardium on its inner surface shows patches of subserous exudation; the vessels on the external surface of the *heart* are gorged with black semi-fluid blood, and give a striped appearance. Circulatory system.

No. 64.

A bullock (3 *years old*), *examined at Culna* 17*th December* 1870.—*Dead about* 16 *hours; ill* 5 *days.—Condition, fair.*

There are excoriations on the *gums* and *buccal membrane*, and there is considerable aphthous deposit; the *rumen* and *reticulum* are healthy; the *omasum* is slightly congested; the mucous membrane of the *abomasum* is of a slate color; there are several small patches of ulceration; the pyloric portion is more especially affected; there is general congestion throughout the *small intestines*, the mucous membrane being of a red color; there is a thick layer of aphtha on *Peyer's patches*; the mucous membrane of the *cæcum* and *colon* is deeply congested; the *liver* is very soft in texture and much congested; the *gall-bladder* contains a very small quantity of bile; many flakes of aphtha are floating in the bile, and on the mucous membrane very many patches of aphtha remain adherent (specimen preserved); the *spleen* is enlarged and much congested. Digestive system.

There is general congestion of the *lungs*. Respiratory system.

[*Note.*—Night coming on prevented further examination.]

No. 65.

A cow (2½ *years old*), *examined at Culna* 17*th December* 1870.—*Dead about* 12 *hours; ill* 3 *days.—Condition, good.*

The mucous membrane of the *mouth* is generally congested, and there are excoriations on the *gums*; on the *omentum* are many tassel-like fringes of congested vessels; the *rumen, reticulum*, and *omasum* show signs of congestion; the mucous membrane of the *abomasum* is very dark in color from congestion. The pyloric portion shows several patches of aphthous ulceration; *small intestines* are generally congested, and here and there are deposits of aphtha; the mucous membrane of *cæcum* and *colon* is of a dark-red color, and there are many black stripes of submucous exudation; there are also several patches of aphtha; the *liver* is soft in texture and congested; on the mucous membrane of the *gall-bladder* are small patches of aphtha; the *spleen* is much congested. Digestive system.

The *lungs* are congested to a slight extent. Respiratory system.

On the inner surface of the *pericardium* are patches of subserous exudation. Circulatory system.

[*Note.*—Night coming on prevented further examination.]

No. 66.

A bullock (16 *years old*), *examined at Culna* 17*th December* 1870.—*Dead* 9 *hours; ill* 5 *days.*—*Condition, poor.*

Digestive system. There is congestion and aphthous ulceration of the mucous membrane at the root of the *tongue;* the *rumen* is much congested; the *reticulum* is healthy; the *omasum* contains a large quantity of hard dry food, and the folds are here and there much congested; the *abomasum* is very deeply congested, being dark-red in color, and having inky patches of sub-mucous exudation. The pyloric portion is of a darker hue and has several patches of aphtha. The *small intestines* are generally congested but no aphtha is found. The *cœcum* is much constricted in its central portion; both the *cœcum* and *colon* are intensely congested, and in both are many inky stripes of sub-mucous exudation, especially at the central portion of the *cœcum;* the *gall-bladder* is distended with a large quantity of coffee-colored bile, and there are several patches of aphtha on the mucous membrane; the *spleen* is also congested.

[*Note.*—This being one of four carcasses to be examined, and as night is approaching, no further examination is made.]

No. 67.

A bullock (4 *years old*), *examined at Culna* 20*th December* 1870.—*Dead* 13 *hours; ill* 9 *days.*—*Condition, very good.*

Digestive system. There is considerable aphthous ulceration at the *gums, buccal membrane, hard palate,* and the root of *tongue;* on the peritoneal surface of the *rumen* are large patches of subserous exudation, and the cuticular membrane has several fissures to which more or less aphtha is attached; in some parts of the stomach there is a general thickening from sub-cuticular exudation, and at these thickened portions the fissures are more evident; the *reticulum* is congested here and there; on the folds of the *omasum* are large and very dark-red patches of congestion with innumerable perforations and considerable aphthous deposit (specimens preserved); the *abomasum* is so deeply congested as to be of a dark-red color, and there are many inky patches of submucous exudation and several aphthous ulcers; some patches are in a more advanced stage, and are covered with a dense layer of aphtha; in addition to the circular patches there are innumerable inky spots of the size of a pea to a bean, and some of these have a pellicle of aphtha; the coats of the stomach are considerably thickened, and this is more marked at the pyloric portion; the *duodenum* is much affected; the mucous membrane is of a pale lead color and has stripes of a darker color, and there are very many small aphthous ulcers; the *small intestines* are likewise generally much congested; *Peyer's patches* are a mass of disease showing an irregular surface of aphthous ulceration; the mucous membrane of the *cœcum* is of a lead color chequered with inky stripes, and there are very many aphthous ulcers of the size of a pea; the mucous membrane of the *colon* is covered with a dense layer of aphtha of the sixteenth of an inch in thickness; the mucous membrane of the *rectum* is congested, and has a few pale stripes of submucous exudation; there is fatty degeneration of the *liver,* the gland being of a light clay color; *gall bladder* very much distended with dark-green bile, and on the mucous membrane are very many specks and patches of aphtha (specimen preserved); the peritoneal surface of the *spleen* shows many dots of exudation, and it is congested; there are light colored patches of submucous exudation at the fundus of the *bladder.*

Respiratory system. *Posterior nares* are very tumid and the mucous membrane is of a purple color; the mucous membrane of the *larynx* and upper portion of the *trachea* is deeply congested and of a bright red color, and here and there are purple patches of submucous exudation, over which a layer of aphtha is deposited; the *epiglottis* is rounded at its borders, and is mottled with claret-colored patches; there is general congestion of the *lungs,* and in some portions there is red hepatization; interlobular emphysema is also present in other portions.

Circulatory system. At the base of the external part of the *pericardium* there is considerable extravasation; the inner surface of the pericardium is mottled with patches of subserous exudation, and the surface of the *heart* itself is likewise so mottled, especially over the right ventricle; the right cavities contain a small clot of semi-fluid and inky blood; the left cavities contain a smaller clot of more solid and of lighter colored blood; on the *endocardium* of the left ventricle are three patches of ecchymosis, and there are a few ecchymotic dots in the right ventricle.

No. 68.

A cow (3 *years old*), *examined at Culna* 23*rd December* 1870.—*Dead,* 6 *hours; ill* 6 *days.*—*Condition, fair.*

Digestive system. There is aphthous condition of the *gums, soft* and *hard palates;* on the *omentum* are innumerable tassel-like fringes of congested convoluted vessels, and there are patches of subserous exudation on the peritoneal surface of all four stomachs; the cuticular lining of the *rumen* is healthy; that of the *reticulum* is congested; that of the *omasum* slightly congested; there

is general congestion of the mucous membrane of the *abomasum*, some parts being of a bright red, others of a lead color; and on the surface generally are port-wine colored dots, varying from the size of a pea to a bean; and on most of these dots there is a central patch of aphtha; bright red and purple patches are seen on the mucous membrane, generally, throughout the *small intestines*; *Peyer's patches* are much raised and congested, and the dots above noticed are covered more or less with aphthous deposit; the *cœcum* contains a small quantity of *hard* fœcal matter; the mucous membrane is chequered with inky stripes, and there are two or three large patches of deep-red exudation; the *rectum* is but slightly congested; the *gall-bladder* contains thick tar-like bile, and its peritoneal surface is covered with dots of subserous exudation; the *spleen* is congested; the mucous membrane of the fundus of the *bladder* is much congested, and the remaining portion is speckled with dots.

The *lungs* are mottled with patches of subserous exudation, and are congested. Respiratory system.

The outer surface of the *pericardium* shows several patches of subserous exudation, and Circulatory system. several similar patches are found on the internal surface of the pericardium and external surface of the *heart*, especially at the root of the pulmonary artery, also on the *endocardium* of the left ventricle.

[*Note.*—Night coming on prevented further examination.]

No. 69.

A bull (5 *years old*), *examined at Culna* 23*rd December* 1870.—*Dead* 8 *hours; ill* 4 *days.* —*Condition, fair.*

The *gums* and *buccal membrane* are much congested; red tassel-like fringes of gorged Digestive system. convoluted vessels are seen on many parts of the *omentum*; the *rumen* is congested, but the *reticulum* is not so; there are streaks and patches of congestion on the folds of the *omasum*; the mucous membrane of the *abomasum* is generally deeply congested, the pyloric portion being especially affected; the color is generally dark-red, but the folds are of a steel-grey color; the entire mucous membrane is covered with dots of ecchymosis; many of these have arrived at a stage of aphthous ulceration, and at the pylorus there are two or three patches of a port-wine color; in the *duodenum* and *small intestines*, generally, are innumerable dots and patches of sub-mucous exudation; in the *cœcum* and *colon* are similar patches and dots, but of a larger size; in the *rectum* is an accumulation of hard dung, and the mucous membrane is of a very dark-red color; the *gall-bladder* is very much distended with light green-colored bile; the mucous membrane of the *urinary bladder* is generally much congested.

There are several patches of congestion on the mucous membrane of the *larynx* and the Respiratory system. upper portion of the *trachea*.

On the inner surface of the *pericardium* are several patches of ecchymosis, and similar Circulatory system. patches are found on the external surface of the *heart*, especially at the root of the pulmonary artery, also in the left ventricle.

[*Note.*—Night coming on prevented further examination.]

No. 70.

A bullock (16 *years old*), *examined at Culna* 23*rd December* 1870.—*Dead* 9 *hours; ill* 5 *days.* —*dition, poor.*

Congestion of the *gums* and *buccal membrane*; there are innumerable red tassel-like fringes Digestive system. of gorged convoluted vessels on the *omentum*; the *rumen*, *reticulum*, and *omasum* show slight congestion of their lining membranes; the mucous membrane of the *abomasum* is deeply congested, being of claret color, and showing on careful inspection very many inky spots of sub-mucous exudation; at the pylorus several portions are covered with aphtha; the mucous membrane of the *small intestines* is generally congested, with patches from one inch to two inches in size of submucous exudation; *Peyer's patches* are very tumid and much congested; the *cœcum* is found much constricted, and on opening the bowel the mucous membrane is found so intensely congested as to be mottled in appearance, and there are inky stripes of sub-mucous exudation; there are also many aphthous ulcers; the *colon* is found in a very similar condition; the *rectum* is congested; the *liver* contained many cysts (cysticercus bovis), and shows signs of fatty degeneration; mucous membrane of the *gall-bladder* is congested and thickened, and on it is much aphthous deposit (specimen preserved); in the *spleen* also are cysts; the mucous membrane of the *larynx* and the upper portion of the *trachea* are much congested.

The *lungs* show interlobular emphysema, and in them are many cysts. Respiratory system.

On the inner surface of the *pericardium* are several patches of subserous exudation, and Circulatory system. a large cyst is found in the wall of the left ventricle of the *heart* (specimen preserved).

No. 71.

A cow (7 years old), examined at Culna 25th December 1870.—*Dead* 5 *hours; ill* 6 *days.*—*Condition, poor.*

Digestive system. The *rumen* and *reticulum* are congested; the *omasum* slightly congested; the *abomasum* is much congested, showing aphthous deposit, especially at the pyloric portion; the *duodenum* is in a similar state; the *smaller intestines* are congested; there are transverse streaks of submucous exudation; *Peyer's patches* are tumid and much congested, and on them generally is aphthous deposit; the *cæcum* is much constricted, and on opening it a thick mould of aphtha escaped; the mucous membrane is reticulated and mottled, and of a dark plum color, and shows inky stripes; the *colon* is of a darker color, and has considerable aphthous deposit, and there are large patches of inky submucous exudation; the *rectum* is congested, and has stripes and spots of submucous exudation; the *urinary bladder* is slightly congested; the *liver* and *gall-bladder* are healthy.

Respiratory system. The mucous membrane of the *larynx* and upper portion of *trachea* are much congested; the *lungs* are congested, and there are ecchymotic patches on the external surface, and much interlobular emphysema is found in them.

Circulatory system. The *pericardium* is congested; there are red tassel-like fringes at the root of the pulmonary artery; the *heart* is congested; the *endocardium* of the right ventricle is congested; in both ventricles a small quantity of semi-fluid blood is found.

No. 72.

A bullock (4 *years old*), *examined at Culna* 25*th December* 1870.—*Dead* 9 *hours; ill* 5 *days.*—*Condition, poor.*

Digesti vesystem. Within the *mouth* aphthous deposits are found in the *gums* and *buccal membrane*, at the root of the *tongue*, on the inner surface of *pharynx*, and on the sides of the *epiglottis*; on removing the mucous membrane, stripes of deep congestion and spots of excoriation are seen; the *epiglottis* is mottled with congestion, and tumid at its margin; *œsophagus* healthy and of a deep-red color; there are red tassel-like fringes on the *omentum*; the lining membrane of the *rumen* is congested, and patches of ecchymosis, about the size of ½ a rupee, are found (specimens preserved); the lining membrane of the *reticulum* is generally congested; the lining membrane of the *omasum* also congested, and the folds are marked with a pink tint from considerable serous exudation.

The mucous membrane of the *abomasum* is congested, and is of a dull red color; near the pylorus it is of a claret color; the folds are thickened, and there is aphthous deposit; there are aphthous deposits and excoriations at the pylorus; *duodenum* coated with aphthous deposits, and on removing the aphthous deposits, excoriations and ulcers are seen, with bright spots of congestion and extravasation; the mucous membranes are thickened and thrown into folds, and of a lighter color; the mucous membranes of the *smaller intestines* look healthy, and marked here and there with spots of submucous exudation. *Peyer's patches* are very tumid and of a bright plum color; the *cæcum* is much constricted, especially at the centre; the lining membrane is congested and mottled, dark purple in color; on removing the layer of aphtha, darker patches of congestion and excoriations are observed; *colon* in a similar state, but darker; *rectum* much constricted, and marked with red and inky stripes of submucous exudation; *liver* light in color, and there is more or less fatty degeneration; *gall-bladder* distended with tar-like bile, and on its lining membrane there are specks of aphtha.

Respiratory system. There is aphthous deposit in the lining membrane of the *larynx* and upper portion of *trachea; posterior nares* very tumid and purple: there is general emphysema (inter, intra-lobular and subpleural) in the *lungs*, except at the base of the right, which is collapsed and of pale white color; left lung generally congested.

Circulatory system. There are several red tassel-like fringes at the root of the pulmonary artery, and a few at the upper portion of the *pericardium*; there are scattered marks of subserous exudation over the *heart*, and 2 or 3 large patches near its apex, and within the left ventricle there is found a considerable quantity of subserous exudation of a bright port-wine color; *urinary bladder* is very much constricted, and the lining membrane is thickened with innumerable specks and large patches of ecchymosis.

No. 73.

A bullock (12 *years old*), *examined at Culna* 25*th December* 1870.—*Dead* 6 *hours; ill* 5 *days.*—*Condition, fair.*

Cutaneous system. No eruption upon the *skin*.

Digestive system. *Gums* excoriated and showing aphthous deposit; base of the *tongue* and *soft palate* much congested, and marked with black spots of submucous exudation; the lining membranes of the *rumen* and *reticulum* are congested; the lining membrane of the *omasum* is also congested, and

shows patches of congestion on the folds; the mucous membrane of the *abomasum* is congested, and is of a dark port-wine color, the folds being still darker in color; aphthous deposit exists over the pyloric half of the stomach; the coats are very much thickened with submucous exudation, especially at the pylorus; the *duodenum* is black in appearance, and entirely covered with a dense layer of aphtha, forming an orange-colored pellicle all over the ulcerated surface; the whole of the mucous membrane of the *small intestines* is of a dark plum color, and dotted over with innumerable patches of aphtha; *Peyer's patches* are raised and entirely covered with aphtha, on removing which excoriations were found; transverse layers of dense mucus and aphtha are found all over the mucous membrane of the bowels; the *cæcum* is found of a dark livid color, and to have inky patches of submucous exudation and patches of abundant deposit of aphtha; the *colon* is in a similar state; the *rectum* is very slightly congested; the *urinary bladder* is deeply congested, and of a light plum color in appearance, showing dark patches of submucous exudation; the *kidneys* are slightly congested; the *liver* is congested; the *gall-bladder* is deeply congested, showing very many dots of aphtha (specimen preserved); the *spleen* is very dark in color from subcapsular extravasation; there are tassel-like fringes on the omentum.

The *larynx* is deeply congested; there is a thick pellicle of aphtha over the entire length of the mucous membrane of the *larynx* and upper portion of the *trachea*; on removing the aphtha, the mucous membrane is found of a very red color, with patches of dark color appearing, more or less like excoriations; the *lungs* are congested and partially collapsed, and have slight interlobular emphysema. Respiratory system.

The *pericardium* is congested, spots of ecchymosis are seen along the coronary artery; there are tassel-like fringes at the root of the pulmonary artery; clots of tarry blood are found in the right ventriele of the *heart*, and spots of congestion are also seen; the left ventricle contains similar clots, and considerable subserous ecchymosis. Circulatory system.

Brain.—The blood vessels are generally much gorged; the *choroid plexus* is very much so, with serous effusion in the lateral ventricles. Nervous system.

No. 74.

A bullock (14 *years old*), *examined at Culna 26th December* 1870.—*Dead* 12 *hours; ill* 5 *days.—Condition, poor.*

The lining membrane of the *rumen* is congested and tinted with subcuticular effusion; the lining membrane of the *reticulum* is similar; the lining membrane of the *omasum* is in the same state, also streaks of congestion are visible on it; the mucous membrane of the *abomasum* is deeply congested, and the folds are of a slate color, showing much aphthous deposit, especially at the pyloric half, which is mottled into dark and light patches of congestion; the *small intestines* are generally congested, and showing myriads of spots and patches of submucous exudation, and considerable aphthous deposit; the *cæcum* is much constricted and contains only a clot of blood and mucus; the mucous membrane of the *cæcum* is of a bright red color, with dark stripes of congestion; the *colon* is in a similar state; the *rectum* is congested with dark longitudinal stripes; the *liver* shows several cysts, as also fatty degeneration; the *gall-bladder* is much distended with dark-green bile, and its mucous membrane showing several dots of aphtha; the *omentum* showing few patches of subserous exudation. Digestive system.

The *larynx* is congested, and shows black patches of submucous exudation; the *epiglottis* is mottled; the upper portion of the *trachea* showing streaks of congestion; the *lungs* are collapsed in many parts, and emphysematous in other parts. Respiratory system.

The *pericardium* is congested, and shows patches of subserous exudation; there are large tassel-like fringes at the root of the pulmonary artery; both the ventricles of the *heart* were found to contain a quantity of semi-fluid blood. Circulatory system.

No. 75.

Cow, examined at Culna 27th December 1870, *at* 5-45 *p. m.—Condition, fair.*

[This animal was brought to the hospital for experimental purposes (case No. 17), and was allowed to associate with the rinderpest cattle; it began to show signs of disease on the 26th and died on the 27th.]

No eruption on the *skin*. Cutaneous system.

The mucous membrane of the *mouth* is generally much congested; there are small patches and excoriations on the *gums*; the *pharynx* is congested; the lining membrane of the *rumen* is congested, and tinted with subcutaneous serous effusion; that of the *reticulum* is also congested, showing large patches; the mucous membrane of the *abomasum* is congested, and of light plum color; the *small intestines* are congested, being of a dark plum color; the *duodenum* shows little disease; *Peyer's patches* are tumid and deeply congested, showing Digestive system.

aphthous deposit; the *cæcum* is much congested, and shows two large claret-colored patches of submucous exudation; it has also some patches of aphtha on its walls; the *colon* is very much congested, and shows slight deposit of aphtha; the *rectum* is slightly congested; the *liver* is much congested with treacle-like blood; the *gall-bladder* shows tar-like patches of congestion; the *kidneys* are congested; the *urinary bladder* is much congested, being of a bright red color.

Respiratory system. The *larynx* is congested, and there is a thin pellicle of aphtha deposited in its inside; the *lungs* are congested in some parts, and collapsed in others; they are emphysematous, both inter, intralobular, and subpleural with dark, claret-colored patches of subpleural effusion.

Circulatory system. The *pericardium* is congested generally; at the root of the pulmonary artery are seen four or five tassel-like fringes; the *endocardium* of the left ventricle of the *heart* shows several large inky patches of subserous exudation.

No. 76.

Heifer, examined at Culna 28th December 1870, *at* 5 *p. m.—Dead about* 9 *hours; ill* 9 *days.—Condition, fair.*

Cutaneous system. No eruption upon the *skin.*

Digestive system. There are excoriations and aphthous deposit on *gums, hard palate,* and *buccal membrane;* the *pharynx* is deeply congested with patches of port-wine color; the *omentum* is covered with innumerable tassel-like fringes; the *rumen* and *reticulum* are slightly congested; there are patches of congestion on the folds of the *omasum,* as also many aphthous ulcers and perforations; the *abomasum* is of a dark-purple color, and is thickened from submucous exudation with aphthous ulcers at its pyloric portion; *duodenum* is in a similar state; the *small intestines* are of a dark and dirty red color, showing innumerable deposits of aphtha; *Peyer's patches* are tumid, and are covered with a dense layer of aphtha and ulceration; the *cæcum* is much constricted, being covered with a very thick layer of orange-colored aphtha, on removing which ulceration of the mucous membrane is found here and there; the *colon* is in a like state; the *rectum* is much congested, and is of a very dark color, about an inch from the *anus;* the *liver* is congested, and *gall-bladder* contains tar-like bile, with one dot of aphtha; there are innumerable subcapsular patches and dots of serous exudation on the *spleen,* which is congested; the *urinary bladder* is very much congested, being of a bright red color, and having two or three dark patches.

Respiratory system. The *posterior nares* is very tumid and dark; the *larynx* is deeply congested with port-wine-colored patches; the *trachea,* especially at its upper portion, is of a light red color; the *lungs* are much congested and emphysematous, both interlobular and subpleural.

Circulatory system. There are tassel-like fringes at upper portion of the inner surface of the *pericardium* and over the root of the pulmonary artery, and right auricle of the *heart,* on which a patch of subserous effusion is also seen; both the cavities contain a small, firm, tar-like clot of blood.

No. 77.

Bullock, examined at Culna 29th December 1870, *at* 8 *a. m.—Dead* 8 *hours; ill* 5 *days.—Condition, fair.*

Cutaneous system. No eruption upon the *skin.*

Digestive system. There are excoriations and aphthous deposit on the *gums, buccal membrane,* and *hard palate;* the *pharynx* is much congested; there are tassel-like fringes on the *omentum;* the *rumen* is much congested in streaks and patches; the *reticulum* is congested; the *omasum* is much impacted, and the contents are very dry; there are patches of congestion on the folds; the *abomasum* is generally of a dark plum color, but at the pyloric portion are seen patches of port-wine color, with excoriations and much aphthous deposit, as also great tumidity from exudation; the *duodenum* is in a similar state, but is entirely covered with aphtha; the *small intestines* are deeply congested, and on opening them, plugs and moulds of aphtha escape; *Peyer's patches* are ulcerated and aphthous, and here and there some of the aphtha remains firmly attached to the mucous membrane; the *cæcum* is much constricted, and holds a large clot of bloody mucus; the whole of the mucous membrane being of a very dark-red plum color, with some aphthous deposit; the *colon* is in a like state, holding a mould of bloody mucus with aphthous deposit; the *rectum* is slightly affected; the *liver* is much congested and friable; the *gall-bladder* is distneded with a quantity of dark coffee-colored bile with stars of congestion on the mucous membrane and aphthous spots; the *spleen* is congested; the *urinary bladder* is very much conesgted at fundus, being of a very dark color.

Respiratory system. The *larynx* is much congested, with aphthous patches, and there is a layer of aphtha over the mucous membrane of the *trachea;* there are cysts in the *lungs,* which are congested and emphysematous, with subpleural patches of effused blood.

Circulatory system. There is much subserous effusion, to the extent of 1½ inch in thickness, at the upper portion of the *pericardium,* and tassel-like fringes on the outer surface of the same; there are many inky patches over the external surface of the *heart.*

No. 78.

Cow, 7 months in calf, examined at Culna 29th December 1870.—*Dead* 5 *hours; ill* 5 *days.*—*Condition, good.*

No eruption upon the *skin.* Cutaneous system.

There is aphthous ulceration of the *gums* and *buccal membrane;* the *pharynx* is congested, being dark-red in color, with inky patches of exudation; there are innumerable tassel-like fringes on the surface of the *omentum;* the *rumen* is congested, with slight aphthous deposits; the *reticulum* is congested; there are streaks of congestion on the *omasum;* the *abomasum* is dark-red from deep congestion, with large patches of claret color; the mucous membrane is much thickened from exudation, especially at the pyloric portion, where there is also much aphthous deposit, with several patches of ulceration; the *duodenum* is of a dark-red color with claret-colored patches and much aphthous deposit; the *small intestines* are very much congested; with innumerable patches and dots of congestion; *Peyer's patches* are covered with a dense layer of yellow aphtha; many of these layers are detached and floating in the liquid contents of the bowel; they are also here and there ulcerated; the *cæcum* is mottled and reticulated with striæ of various hues of exudation and much aphthous deposit; the *colon* is in a similar state, but holding moulds of dense aphtha; the *rectum* is congested in striæ with much aphthous deposit; the *liver* is pale, and has fatty degeneration; there is much aphthous deposit, of the color of ochre, on the *gall-bladder,* with flakes and pieces of aphtha in the ochre-colored bile with which it is distended; the *spleen* is much congested, with patches of subcapsular effusion; the *urinary bladder* is congested, and at fundus is of a dark-red color. Digestive system.

The *larynx* is dark-red from congestion, with inky patches of exudation, and one speck of aphtha in the inner part of the *larynx;* there are streaks of congestion on the *trachea;* the *lungs* are much congested and heavy, especially the left one, which is also emphysematous to a slight extent. Respiratory system.

There are tassel-like fringes on the external surface of the *pericardium,* and subserous effusion on the inner surface; there are subserous patches of effusion on both surfaces of the *heart.* Circulatory system.

Calf.—The *reticulum* is congested and has aphthous deposit; there is much congestion of the *abomasum,* and flakes of aphtha are floating in the mucus of the organ; there is aphthous deposit to a great extent on the external surface of the *amnion* (specimen preserved). Digestive system.

No. 79.

Bullock, examined at Culna 30th December 1870, *at 7 a. m.*—*Dead* 11 *hours; ill* 4 *days.*—*Condition, fair.*

No eruption upon the *skin.* Cutaneous system.

The *gums, buccal membrane,* and *hard palate* are excoriated with aphthous deposit, and the *soft palate* is considerably thickened from submucous exudation; the *pharynx* is deeply congested, and there are inky spots of exudation thereon; there are a few tassel-like fringes on the *omentum;* the *rumen* and *reticulum* are deeply congested; the *omasum* equally so; the *abomasum* is of a livid color, and is intensely congested at its pyloric portion with tumidity, excoriations, and slight aphthous deposits; the *duodenum* is in a like state, but with a greater amount of aphtha; the *small intestines* are generally congested, with inky striæ of submucous exudation, and throughout there are seen dots of aphtha here and there; *Peyer's patches* are raised and tumid; the mucous membrane of the *cæcum* is of a claret-color, with inky striæ and a slight amount of aphthous deposit thereon, and it contains a small amount of bloody serum; the *colon* is in a similar state, with clots of blood and aphtha floating in the sanguineous fluid that is found in it; the *rectum* is deeply congested, and is much thickened from submucous exudation; the *liver* is slightly congested; the *gall-bladder* is congested, and is distended with pale yellow bile, and there are three or four dots of aphtha on it; the *spleen* is speckled with subcapsular effusion; the *urinary bladder* is much congested, especially at fundus. Digestive system.

There is a general congestion of the *lungs,* which are here and there emphysematous, and one or two portions of which are collapsed. Respiratory system.

The inner surface of the *pericardium* is congested, and there are one or two tassel-like fringes at the root of the pulmonary artery. Circulatory system.

No. 80.

She-goat, examined at Culna 2nd January 1871, *at 7-30 a. m.*—*Dead* 10½ *hours.*—*Condition, fair.*

[This animal was brought to the hospital, sound and healthy, for experimental purposes, and on the 24th December 1870 was inoculated behind the off-shoulder with rinderpest matter; on the 30th it showed signs of rinderpest, and died on the 1st January 1871 (case No. 26).]

No eruption upon the *skin.* Cutaneous system.

There is congestion of *gums* and *buccal membrane,* especially of the latter, at which two or three papillæ are slightly excoriated; the *hard* and *soft palates* are also congested; the latter is Digestive system.

tumid, and very much thickened from submucous exudation; there are many tassel-like fringes on the *omentum;* the *rumen, reticulum,* and *omasum* are not affected; the *abomasum* is very much congested, and there are several small ulcers at its pyloric portion; the pylorus is livid in color from submucous exudation; the *duodenum* is congested with slight aphthous deposit, but the color of the bowel is very pale, compared to the dark lividity of the pylorus; the whole of the *small intestines* are very much congested, being red in color, and the veins are very much gorged with dark-purple blood; the *solitary glands* are very tumid, and are easily observable externally as well as internally, from their tumidity; on squeezing one of these solitary glands, cheesy matter comes out; in the neighbourhood of the *solitary glands* the veins are very much gorged, and some of the glands show severe aphthous ulceration; *Peyer's patches* are slightly raised and tumid; the *cæcum* is very much congested, and several *solitary glands* are here found very much enlarged and about the size of a large bean, and these glands throughout the whole of the intestines are very much enlarged; the *colon* is likewise much congested, also thickened; several patches and some well-marked striæ are found in every part of the bowels, with some dots of aphtha here and there; the intestines generally, as they lie in the abdominal cavity, show much congestion, and some of them are very deeply congested; the *rectum* is slightly congested; the *liver* is healthy; the lining membrane of the *gall-bladder* is covered with aphthous deposits; the *spleen* is healthy.

Respiratory system. The *larynx* is deeply congested, and the borders are very much rounded by tumidity; there is an aphthous deposit on both arytenoid cartilages, and on the left border of the *epiglottis;* on opening the *larynx* and *trachea,* the former is found to be deeply congested, as also the latter in striæ to a slight amount; there is red hepatization on two or three portions of the *lungs,* which are congested with patches of subpleural ecchymosis here and there.

Circulatory system. The *pericardium* is congested on both surfaces, and there are tassel-like fringes at the upper portion, especially surrounding the base of the pulmonary artery; these fringes are also observed on the external surface of the *heart* and inner surface of the *pericardium,* and are evidently shreds of plastic material, which has partially connected the bag to the *heart;* the right ventricle contains a large clot of tarry blood; the left ventricle contains a small quantity of like blood.

No. 81.

Bullock, examined at Culna 6th January 1871, *at* 7-30 *a. m. Dead* 14 *hours.—Condition, fair.*

Cutaneous system. There is no eruption upon the *skin.*

Digestive system. The *gums* are deeply congested; the *hard palate* and *molar gums* are excoriated; the *pharynx* is much congested with aphthous deposit on the *fauces;* there are a few faint tassel-like fringes on the surface of the *omentum;* the *rumen* is generally congested, but in some portions there are large patches of deeper congestion, and around some of the subcuticular blood-vessels there is much sanguineous effusion; the *reticulum* is equally congested; the folds of the *omasum* are generally congested in large patches, and the contents are a little hard; here again there is much sanguineous exudation around the larger vessels of the folds; the *abomasum* is deeply congested with large claret-colored patches, the folds being of a slate color; but on the floor between the folds and at the pyloric portion these patches are best seen; the lining membrane of the stomach is much thickened from submucous exudation; this is specially the case at the pyloric portion, where there is aphthous deposit to a considerable extent; the *duodenum* is congested, but of a brighter plum color than that of the stomach, and is covered with dots of deeper congestion, some of these having a pellicle of aphtha; the rest of the *small intestines* show general congestion of the mucous membrane, and there are dots of aphtha here and there; the *solitary glands* contain cheesy matter; *Peyer's patches* are deeply congested and tumid, but without any aphthous deposit; the *cæcum* holds a small amount of sanguineous fluid of a damson color, and is mottled and reticulated with striæ at the fundus, and at different parts is covered with aphthous deposits; the *colon* is in a similar state, except that it is not so mottled or reticulated; the *rectum* is slightly congested; there is fatty degeneration of the liver, which is of a pale color; the peritoneal surface of the *gall-bladder* is much congested, and there is much aphtha on its mucous membrane; the *urinary bladder* is but slightly congested.

Respiratory system. The *posterior nares* are very deeply congested; the *larynx* is equally congested; there are striæ of congestion in the *trachea;* there is interlobular emphysema in *lungs,* and there are large patches of subserous ecchymosis inside the left ventricle of the *heart.*

No. 82.

Cow-calf, examined at Culna 8th January 1871, *at* 8 *a. m. Dead* 12 *hours; ill* 4 *days.—Condition, poor.*

Cutaneous system. No eruption upon the *skin.*

Digestive system. The mucous membrane of the *mouth, buccal papillæ,* corner of *lips, palate,* and borders of the same are covered with excoriations and aphthous deposit; the *pharynx* is much

congested; there are a few tassel-like fringes on the *omentum;* the *rumen, reticulum, and omasum* are slightly congested, and there is much tinting from sanguineous effusion around their vessels; the *abomasum* is of the *abomasum* is of the usual dark plum color, the folds being of a purple hue; the mucous membrane of the *abomasum,* especially at the pylorus, is tumid, with considerable aphthous deposit; the *duodenum* is of the same color as the *abomasum,* and is much thick ened from submucous exudation; it is also aphthous; the *small intestines* are slightly congested; *Peyer's patches* are raised and tumid, with excoriations and aphthous deposit; the contents of the bowels are very liquid and trifling in amount, being of a pale yellow color; the *cœcum* is congested, especially at the middle portion of the body, with largé patches of aphthous deposits; the surface of the *colon* is mottled and reticulated with inky striæ; the *rectum* is slightly congested with longitudinal striæ; the *liver* is congested and friable; the *gall-bladder* is distended with tarry bile, with slight granular aphthous deposits; there are ecchymotic patches on the surface of the *spleen;* the *urinary bladder* is very slightly congested at the fundus.

The *larynx* is much congested, and at its junction with the *trachea* there is a thick deposit of aphthous; there is interlobular emphysema on the *lungs,* which are congested, with black patches of subpleural exudation. Respiratory system.

There are a few faint patches of ecchymosis on the surface of the *heart.* Circulatory system.

No. 83.

Cow, examined at Culna 8th January 1871, *at* 7·30 *a. m.—Dead* 7½ *hours; ill* 6 *days.—Condition, good.*

There are no eruptions upon the *skin;* on removing the skin, the areolar tissue is tinted with infiltration. Cutaneous system.

There are excoriations and aphthous ulceration of the *gums, buccal membrane,* and *hard palate;* the *pharynx* is congested; there are tassel-like fringes on the *omentum;* there is congestion and subcuticular exudation around the blood-vessels of the *rumen;* the *reticulum* and *omasum* are slightly congested; there is perforation of long standing in two folds of the *omasum;* the *abomasum* is so deeply congested as to be of a damson color, and is thickened from submucous exudation, especially at the pylorie portion, with aphthous ulceration; the *duodenum* is of the same color, and is covered with large patches of aphtha; the *small intestines,* as seen lying in the abdomen, are of a blue inky color, and on being opened are found to contain a little muco-sanguineous fluid, and on being held up to the sun are found to be deeply congested throughout, and covered with mushroom-like deposits of aphtha; the mucous coat in many places is so much ulcerated as to be obliterated; the bowels may be said to be gangrenous, and with the slightest tension are easily rent; the whole mucous membrane of the *cœcum* is of a dark plum color, tumid, and ulcerated, showing here and there several patches of aphthous deposit; it is also much constricted, and contains muco-sanguineous clots; the *colon* is in even a worse state, the lining membrane being of a dark-purple color from gangrene, and holding a small clot of blood and shreds of lymph; the *rectum* is of a dark-red color from congestion, with inky striæ of submucous exudation; the *liver* is very soft and friable, being of a pale color; the *gall-bladder* is very much distended with tarry bile, which, in everting, is found clinging and hanging to the mucous membrane, and by degrees slides off the mucous membrane, and exposes an ulcerated surface; the peritoneal surface of the *spleen is* mottled with ecchymosis, and around all the superficial vessels are spots of exudation; the *urinary bladder* is deeply congested. Digestive system.

The *larynx* is deeply congested with large patches of aphthous deposits on its mucous membrane and upper portion of the *trachea;* the *lungs* are very much congested with very slight emphysema, the congestion in some portions being in all but the first stage of hepatization. Respiratory system.

Pericardium tinted with subserous exudation, with ecchymotic patches on the external surface of the *heart* and over the coronary artery; there are clots of tarry blood in the right ventricle of the heart, as also in the left ventricle, and patches of subserous exudation. Circulatory system.

No. 84.

Cow-calf, examined at Culna 9th January 1871, *at* 8 *a. m.—Dead* 8 *hours; ill* 4 *days.—Condition, fair.*

No eruption upon the *skin.* Cutaneous system.

There are excoriations at the angles at the *lips;* the *gums* and *pharynx* are congested; the *rumen, reticulum,* and *omasum* are not affected; the *abomasum* is very slightly congested; the *small intestines* are but faintly congested; *Peyer's patches* are tumid and raised; the *cœcum* is of a light slate color, and has several patches of aphthous deposit; the *colon* is in a similar state, but has a greater amount of aphtha; the *rectum* is healthy, the *liver* is pale and yellow, and the *gall-bladder* is much distended with dark-green viscid bile, which comes away in large jelly-like clots, and the mucousmembrane is covered with aphthous deposits; the *urinary bladder* is very slightly congested. Digestive system.

Respiratory system. There is aphthous deposit inside the *larynx*, and at the upper portion of the *trachea*, both of which are congested; there is red hepatization of both *lungs*, with two or three spots of grey hepatization; the left lung is partially adherent to the wall.

Circulatory system. The *heart* is healthy.

[*Note.*—This animal has evidently died from disease of the lungs, associated with rinderpest.

No. 85.

She-goat, examined at Culna 10th January 1871, *at* 8-30 *a. m.—Dead* 4½ *hours.—Condition, fair.*

[This animal was purchased for experiment, and was housed and fed with the cattle in hospital affected with rinderpest since 19th December; died on the 9th (experimental case No. 27).]

Digestive system. The *gums* and *buccal membrane* are healthy, but the posterior portion of the *hard palate* is deeply congested and excoriated; there is congestion of, and aphthous deposit on *pharynx* and on floor around tonsils; there are innumerable tassel-like fringes on the *omentum*; the *rumen, reticulum*, and *omasum* are healthy; the *abomasum* has a general slight blush of congestion with two or three patches of congestion of a deeper hue, and at its pyloric portion, the mucous membrane is livid, and here and there are two or three dots of aphtha of the size of a pea, and four or five inky patches of subserous exudation; the *duodenum* is very livid in color, the mucous membrane being thickened; and on carefully dropping water on its surface, it is found covered with a thin pellicle of orange-colored aphtha; some portions of the bowel are of a blue inky color; the *small intestines* are generally as much congested as are generally found in severe cases with cattle; the peritoneal surface of the bowels, as they lie in the abdomen, presents a bright pink hue, and on carefully allowing water to run over the mucous surface, the bright congested surface of the membrane, and specks of aphtha here and there, are clearly seen; the mucous membrane of the *cæcum*, which is constricted, is tumid and congested with several patches of inky congestion; on the peritoneal surface the glands are found enlarged and contain cysts of cheesy matter; the *colon* is in a similar state; the *rectum* is slightly congested, and shows a few longitudinal striæ; the *liver* is slightly congested; the *gall-bladder* is distended with dark-green bile; but there is no aphtha; there is a faint blush of congestion on the *urinary bladder*.

Respiratory system. The *larynx* and the upper portion of the *trachea* are congested, and the mucous membrane is very tumid, but not aphthous; there is congestion of the *lungs*, the external surface of which is of a pink and black color, the black portions being the congested portions of the lungs.

Circulatory system. The external surface of the *heart* shows general congestion, with a bright tinting of subserous exudation; the lining membrane of the right ventricle shows general congestion; the left ventricle is healthy; the blood in both the cavities is tar-like.

Nervous system. There is a slight congestion of the *pia mater*; the *choroid plexus* is slightly gorged.

No. 86.

Sheep, examined at Culna 10th January 1871, *at* 8-30 *a. m.—Dead* 10½ *hours.—Condition, good).*

[The animal, sound and healthy, was inoculated with rinderpest aphtha behind the off-shoulder, showed signs of illness on the 5th day, and died on the 9th day (case No. 23).]

Cutaneous system. There is no eruption upon the *skin*.

Digestive system. There are excoriations under the *upper lip* and on centre of the *hard palate*; a dark patch of congestion is visible on left side of the dorsum of the *tongue*; the *rumen* and *reticulum* are slightly congested with tinting from infiltration around blood-vessels; the *omasum* is healthy; there is general congestion of the *abomasum*, with very many patches of congestion of a deeper hue; the *small intestines* are generally slightly congested, but the whole of the mucous membrane shows innumerable dots and small patches of submucous exudation; the *solitary glands* are enlarged and contain the usual yellowish-green cheesy matter; *Peyer's patches* are tumid and raised, showing well-marked aphthous deposit; the *cæcum* is constricted with much submucous exudation and many striæ, giving a reticulated appearance, and is covered with considerable aphthous deposit; the bowel contains but a trifling amount of muco-sanguineous fluid, in which flakes of aphtha are found; the *colon* is in a similar state; the appearance of the *cæcum* and *colon* is precisely identical with that shown in cattle; the *gall-bladder* contained tar-like bile, but no aphtha; the *urinary bladder* shows two or three faint patches of congestion.

Respiratory system. The *posterior nares* are tumid, congested, and covered with aphthous deposit; there is congestion of the *larynx* and upper portion of the *trachea*; the *nasal membrane* is deeply congested; the *lungs* are emphysematous, two or three portions of which are much congested and heavy, being of a pink and dark-purple color, the dark-purple patches marking the position of the congested portions of the lungs.

The external surface of the *pericardium* is congested, and the vessels very much gorged; the external surface of the *heart*, especially in the furrows separating the ventricles and between the auricles and ventricles, is tinted with subserous exudation; there are also several well-marked patches of ecchymosis, these being distinctly observable at the upper portion of the right ventricle. The entire external surface of the heart is not of the usual heart color, but is bright-red from congestion; the right cavities contained a mould of half yellowish-white fibrinous and half dark-tarry semi-fluid blood; the division between the yellowish-white and tarry clot is so distinct, as to make it worth preserving as a specimen; there are one or two faint patches of subserous exudation in the right ventricle; the left ventricle contained a clot of tarry blood; the apix of the *heart* is very much rounded, not so pointed as usual, and, owing to the muscular fibres of both ventricles having become softened in texture, each ventricle at the apix bulges out and gives a doubled apix to the heart. Circulatory system.

The *pia mater* is much congested, and the *choroid plexus* very much engorged with effusion of serum in the lateral ventricles. Nervous system.

No. 87.

Bullock, examined at Culna 16th January 1871, *at* 8-30 *a. m.—Dead* 15 *hours; ill* 5 *days.—Condition, very poor.*

No eruptions upon the *skin.* Cutaneous system.

The *gums* are excoriated and aphthous; there is aphthous deposit upon the *hard* and *soft palates*, and on every portion of the mucous membrane; there are tassel-like fringes upon the *omentum;* the *rumen* and *reticulum* are slightly congested; the *omasum* is much congested with dots of aphtha here and there; the *abomasum* is of a damson color, the folds being of a slate color; the mucous membrane at the pyloric portion is covered with a thick pellicle of aphtha; and is there very much thickened; at the commencement of the *duodenum* the aphtha is deposited in thick masses; the *cæcum* is very much constricted in its central portion, and on opening it at that portion, inky striæ are deeply marked, the striæ being reticulated and motled; every portion of the bowel presents the same appearance in more or less degree; here aphtha in small patches is also found; the *colon* is in a similar state; the *rectum* is slightly congested; the *liver* is much indurated, and found to be slightly gritty when cut with a knife; the *gall-bladder* is very much distended wit hbile of a pale yellow color, in which many patches and flakes of aphtha are seen floating; the mucous membrane is much congested, and many patches of aphtha remain adherent to it; the *spleen* is speckled with sbupleural dots of congestion; the *urinary bladder* is generally much congested. Digestive system.

The *nasal membrane* is excoriated with aphthous ulcers, reminding one of the appearance of the nasal membrane in glanders; the *posterior nares* are very tumid and deeply congested; the *larynx* and *trachea* are congested, but not of that deep color generally seen in rinderpest cases; there are cysts in the *lungs*, which are in some places emphysematous, and have ecchymotic patches of subpleural extravasation. Respiratory system.

The *pericardium* on the inner surface shows many dots of ecchymosis; the muscular tissue of the *heart* is soft and flabby; the right ventricle has many star-like patches of subserous congestion; the left ventricle has several well-marked patches of ecchymosis. Circulatory system.

No. 88.

Heifer, examined at Culna 16th January 1871.—*Condition, good.*

[This animal, sound and healthy, was inoculated with nasal discharge of a sheep suffering from rinderpest on the udder and inside the right thigh by subcutaneous introduction and scarification on the 7th January 1871. On the 12th the animal showed signs of rinderpest, and died on the 16th (experimental case No. 44).]

No eruption upon the *skin;* the *vagina* is deeply congested. Cutaneous system.

The *gums* and *lower lip* are excoriated and aphthous; there are also excoriations on the *molar gums;* the *pharynx* is congested, but not of so deep a hue as is usually found; there are tassel-like fringes on the *omentum;* the *rumen* and *reticulum* are faintly congested; there are perforations and lacerations on folds of the *omasum;* the *abomasum* is deeply congested, being of a dark plum color, with considerable aphthous deposit; its pyloric portion being very tumid from submucous exudation; the entire surface is covered with a pellicle of aphtha; the *duodenum* is found to be in a similar state, but the aphtha thereon is in patches; the *small intestines* are very much congested, and there are large patches of aphthous deposit throughout the entire bowel, the aphtha being of considerable thickness and of a pale orange color; it is not, however, firmly attached to the mucous membrane; the contents of the *cæcum* consists of a mixture of serum and flakes and clots of aphtha; the *colon* is in a similar state, and both *cæcum* and *colon* are deeply congested; the *cæcum* specially so at the blind end, where there are also inky submucous exudation; here and there are patches of dense aphtha attached to the mucous membrane of both *cæcum* and *colon;* the *rectum* is of a bright-red color from congestion, and the contents are mucous and aphthous; the *liver* is soft and friable; the mucous membrane of the *gall-bladder*, which is distended with coffee-colored bile, Digestive system.

is much congested with considerable aphthous deposit; the *spleen* is slightly congested; the *urinary bladder* is congested at fundus.

Respiratory system. The *posterior nares* is tumid and much congested; there are several patches of aphtha inside the *larynx*, which is congested, though not of the usual deep hue; the *lungs* are emphysematous, both subpleural and interlobular.

Circulatory system. The *pericardium* is of a beautiful pink hue from subserous congestion, and at the root of the pulmonary artery there is a large tassel-like fringe; there are two or three small patches of ecchymosis in the left ventricle of the heart.

No. 89.

Cow, examined at Culna 23rd January 1871.—*Dead* 5 *hours; ill* 6 *days.—Condition, fair.*

Cutaneous system. No eruption upon the *skin;* there is a slight subcutaneous congestion.

Digestive system. There are excoriations on *gums, buccal membrane,* and *hard* and *soft palate,* with considerable aphthous deposit; the *rumen, reticulum,* and *omasum* are very slightly congested; the food in the omasum is dry, and its folds are likewise dry and parchment-like; the *abomasum* is deeply congested, being generally of a dark-red color, and the folds of a purple hue; there are excoriations and considerable aphthous deposit at the pyloric portion, with small ulcers; the *duodenum* is much congested, so are the *small intestines,* which are of a bright plum color, with aphthous deposits here and there; the *solitary glands* are very much enlarged, containing the usual cheesy matter; *Peyer's patches* are raised and very deeply congested, being of a damson color, with deposits of aphtha; the *cæcum* is very much constricted, and is of a dark-red and damson color, from intense congestion, with inky striæ of submucous exudation and much aphthous deposit; the *colon* is in a similar state, but without aphtha, still the inky striæ are particularly well marked; the other portions of the bowel are of a light slate-color; the *rectum* is slightly congested; the *liver* is congested with small patches of subcapsular ecchymosis; the *gall-bladder* is much distended with linseed-oil-like bile, being generally congested, and having starry patches of congestion and several aphthous deposits; the *spleen* is much congested with innumerable dots of subcapsular ecchymosis; the *urinary bladder* is generally much congested, and is of a bright flesh color.

Respiratory system. The *nasal membrane* is congested; *posterior nares* are very much congested and tumid; there is nothing abnormal in the *lungs,* except a slight tint of congestion, and a few small cysts.

Circulatory system. The inner surface of the *pericardium* is studded with small specks of subserous exudation, and there are two or three larger patches at the root of the pulmonary artery.

No. 90.

Cow, examined at Culna 24th January 1870.—*Dead* 9 *hours; ill* 10 *days.—Condition, fair.*

Cutaneous system. No eruption upon the *skin.*

Digestive system. The *rumen* and *reticulum* are healthy; the *omasum* is partially congested and aphthous; there are aphthous ulcers in the *abomasum,* especially at the pylorus; there is a general congestion of the organ; the mucous membranes of the *small intestines* are ulcerated and aphthous; there are innumerable aphthous ulcers in the *cæcum,* which are cicatrizing; the *colon* is in a similar state; the *rectum* is healthy; there are cysts on the *liver;* there are aphthous ulcers on the *gall-bladder* healing; there is much congestion of the *lungs* and partial hepatization.

Respiratory system. The *larynx* is congested.

Circulatory system. There are tassel-like fringes over the root of the pulmonary artery, with dots of ecchymosis on right ventricle and inside left ventricle.

No. 91.

Cutaneous system. *Bullock, examined at Culna 25th January* 1871.—*Dead* 18 *hours; ill* 6 *days.*

Digestive system. No eruption upon the *skin.*

There are excoriations and aphthous deposit on the *lips, buccal membrane,* and *tongue,* as also *pharynx;* the *rumen, reticulum,* and *omasum* are congested; the *abomasum* is deeply congested, being of a dark-red color, while the folds are of a purple color, and the pyloric portion of the *abomasum* is aphthous; the *duodenum* is in a similar state; the *small intestines* are congested and of a light red color; *Peyer's patches* are raised and of a dark-red color, but not aphthous; the *cæcum* is slightly congested, but there are several aphthous spots on it; the *colon* is in a like state; the *rectum* is but slightly congested; the *liver* is congested; has many cysts and fatty degeneration; the *gall-bladder* is much distended and congested, there is abundant aphthous deposit in spots, and a thick pellicle on one portion.

Respiratory system. There are excoriations and aphthous deposit on the *larynx* and *trachea;* the *lungs* are congested, and show red hepatization in some parts, and emphysema in others.

Circulatory system. The *pericardium* is much congested, with a few tassel-like fringes at the root of the pulmonary artery, and in the inner and upper portion of the pericardium; there is an ecchymotic spot in the left ventricle of the heart.

List of Drawings of Pathological Appearances presented in Rinderpest, executed by students of the Government School of Art under the direction of the Principal, H. H. LOCKE, ESQ.

I.—Fold of the omasum of a cow, showing aphthous patches. (Post-mortem No. 89.)

II.—Gall-bladder of a cow, showing aphthous patches. (Post-mortem No. 89.)

III.—Gall-bladder of a cow, showing aphthous patches. (Post-mortem No. 64.)

IV.—Portion of the abomasum, pylorus, and commencement of duodenum of a cow, showing congestion and aphthous deposit. (Post-mortem No. 89.)

V.—Small intestine of a cow, showing aphthous patches, mucous membrane intensely congested, verging towards gangrene. (Post-mortem No. 90.)

VI.—Mouth and palate of a bullock, showing excoriated ulcers and aphthous deposit. (Post-mortem No. 89.)

VII.—Left ventricle of the heart of a cow, showing subserous ecchymosis. (Post-mortem No. 89.)

VIII.—Cœcum (everted) of a cow, showing aphthous spots and transverse stripes of submucous hæmorrhage and intense congestion of the mucous membrane. (Post-mortem No. 87.)

IX.—Portion of the abomasum of a bullock, showing thickening and congestion of the mucous membrane and aphthous deposit (No. 98). (Post-mortem No. 87.)

X.—Trachea of a cow, showing congestion of mucous membrane and aphthous deposit. (Post-mortem No. 84.)

XI.—Portion of the abomasum of a bullock, showing thickening congestion and ulceration of the mucous membrane. (Post-mortem No. 55.)

XII.—Portion of amnion, showing aphthous deposit. (Post-mortem No. 78.)

List of Pathological Specimens deposited in the Museum of the Medical College Hospital, Calcutta.

No.	Post-mortem No.	Subject.	Part.	Description.
1	84	Cow-calf ..	Trachea and larynx ...	Aphthous deposit.
2	72	Bullock ...	Rumen ...	Subcuticular exudation.
3	56	Bullock ...	Rumen and abomasum ...	Scab-like aphthous deposit on former; aphthous deposit in patches, and excoriation of latter.
4	27, 29	Bullock ...	Rumen, reticulum, omasum and abomasum.	Showing aphthous deposit.
5	67	Bullock ...	Omasum ...	Perforation and aphthous condition of folds.
6	41	Cow ...	Omasum ...	A very long rent of fold.
7	43	Buffalo ...	Omasum ...	Aphthous deposits on, and perforations of, folds.
8	41	Buffalo ...	Omasum ...	Rents extending the entire length of the folds.
9	52	Bullock ...	Omasum ...	Perforation and rents of, and aphthous deposit on, the folds.
10	90	Cow ...	Omasum ...	Aphthous, perforation and rents of the folds.
11	76	Heifer ...	Omasum ...	Aphthous condition and perforation of folds.
12	83	Cow ...	Omasum ...	Perforation of folds.
13	88	Heifer ...	Omasum ...	Perforation and rents of folds, some of long standing.

No.	Post-mortem No.	Subject.	Part.	Description.
14	40	Calf ...	Omasum ...	Perforation of folds.
15	55	Bullock ...	Abomasum ...	Excoriation and aphthous deposit in transverse patches.
16	76	Heifer ...	Abomasum ...	Aphthous deposit in large moss-like patches; thickening of mucous membrane.
17	78	Calf ...	Abomasum ...	Aphthous deposit.
18	83	Cow ...	Abomasum ...	Aphthous ulceration; mucous membrane thickened and discolored.
19	88	Heifer ...	Abomasum ...	Aphthous deposit in shreds and fringes.
20	80	Goat ...	Abomasum, cœcum, and gall-bladder.	Show aphthous deposits; solitary glands of cœcum enlarged.
21	89	Bullock ...	Abomasum ...	Showing thickening, congestion, and ulceration of the mucous membrane.
22	78	Cow ...	Pylorus ...	Thickening and abundant aphthous deposit.
23	76	Heifer ...	Pylorus and duodenum ...	Abundant aphthous deposit in large patches.
24	38	Cow ...	Pylorus ...	Submucous exudation; aphthous deposit in patches.
25	77	Bullock ...	Pylorus ...	Thickened from submucous exudation, and showing aphthous deposit in the form of pendulous fleshy excrescences.
26	87	Bullock ...	Pylorus ...	Thickening very abundant, aphthous efflorescence.
27	82	Cow-calf ...	Duodenum ...	Aphthous deposit and ulceration.
28	90	Cow ...	Duodenum and pylorus ...	Aphthous deposit in a continuous layer and in patches. Mucous membrane much thickened and corrugated.
29	88	Heifer ...	Duodenum and pylorus ...	Aphthous deposit in patches, thickening and discoloration
30	88	Heifer ...	Small intestine ...	Aphthous deposit general and in mushroom-like excrescences; a Peyer's patch tumid and covered with aphtha.
31	83	Cow ...	Small intestine ...	Deep discoloration and aphthous deposit in continuous layer, and mushroom-like excrescences.
32	88	Heifer ...	Small intestine ...	Thickening and aphthous deposit in fleshy outgrowths.
33	82	Cow-calf ...	Peyer's patches ...	Tumid, raised; aphthous deposit and ulceration.
34	56	Buffalo ...	Peyer's patches ...	Tumid; aphthous deposit.
35	77	Bullock ...	Peyer's patches ...	Aphthous deposit.
36	56	Buffalo-cow ...	Peyer's patches ...	Showing aphthous deposit.
37	67	Bullock ...	Cœcum ...	Covered with aphthous deposit; shows pigmentary striæ.
38	90	Cow ...	Cœcum ...	Aphthous ulcers cicatrizing; shows also reticulated striæ.
39	86	Sheep ...	Cœcum ...	Deep congestion, reticulated striæ of submucous exudation, with aphthous deposit.
40	83	Cow ...	Cœcum ...	Everted, thickening, discoloration, and aphthous deposit.

No.	Post-mortem No.	Subject.	Part.	Description.
41	...	Calf ...	Cœcum ...	Six months ago recovered from rinderpest died of diarrhœa; shows spots of dark submucous pigmentations.
42	67	Bullock ...	Colon ...	Aphthous deposit in patches, and as a continuous layer.
43	87	Bullock ...	Gall-bladder ...	Everted, thickening, and aphthous deposit.
44	73 / 82	Bullock and Calf..	Gall-bladders ...	Everted; aphthous deposit in form of scabs.
45	43	Buffalo ...	Gall-bladder ...	Everted; extensive scab-like deposit on mucous membrane.
46	91	Buffalo ...	Gall-bladder ...	Everted; aphthous deposit in semi-detached patches.
47	70	Bullock ...	Gall-bladder ...	Everted; aphthous deposit, submucous pigmented stripes.
48	64	Bullock ...	Gall-bladder ...	Everted; aphthous deposit in scabby patches.
49	66	Bullock ...	Gall-bladder ...	Everted; aphthous deposit.
50	90	Cow ...	Gall-bladder ...	Everted; aphthous deposit in scabby patches, and continuous layer and pigmented branches.
51	83	Cow ...	Gall-bladder ...	Everted; aphthous deposit, continuous, and in patches.
52	88	Heifer ...	Gall-bladder ...	Everted; aphthous deposit in patches.
53	78	Cow ...	Gall-bladder ...	Everted; aphthous deposit in large patches; thickening, pigmented branches.
54	67	Bullock ...	Gall-bladder ...	Everted; aphthous deposit in small patches.
55	71	Bullock ...	Urinary bladder ...	Aphthous deposit and thickening on mucous membrane.
56	77	Bullock ...	Heart ...	Subserous ecchymosis.
57	83	Bullock ...	Heart ...	Patches of subserous hæmorrhage in left ventricle.
58	70	Bullock (died of rinderpest).	Heart ...	Hydatid cysts in portions of left ventricle.
59	80	Bullock ...	Heart ...	Tassel-like fringes (fibrinous) on external surface.
60	53	Buffalo ...	Lung ...	Portion hepatized.
61	53	Buffalo ...	Lung ...	Portion hepatized.
62	52	Bullock ...	Lung ...	Interlobular and subpleural emphysema.
63	84	Cow-calf ...	Lung ...	Showing hepatization.
64	78	Cow ...	Amnion ...	Showing aphthous deposit.

APPENDIX No. VIII.

GLOSSARY.

GLOSSARY.

COMPILED BY BABOO HEM CHUNDER KERR.

A.

Abad, (P. آباد) Cultivated as a village or tract of country.

Abomasum. (L. from *ab*, beneath and *omasum*, the paunch.) The fourth stomach of a ruminating animal.

Aencha, (H. ऐंच *ainch*, drawing.) Griping of the stomach.

Agia, (H. contr: of आगनवात *áganbát* from S. अग्नि *agni*, fire and वात, *váta*, windy swelling.) The disease Farcy.

Ahous, Vide ause.

Ahren bhao, (Corr. of S. अरण्य भाव *aranya bháva*, wild state.) Inflammation of the brain and its membranes, whereby an animal becomes delirious and its demeanor, wild.

Ainjur, (P. انجیر *anjereh.*) Notched nettle.

Aishoo, (Vide Aishu).

Aishu, (B. এঁষে from P. ایشا *Aysha*, bruise.) Foot and mouth disease.

Ajwain, (H. अजवायन S. यमानी *yamáni*) Ligusticum-ajwain.

Akoond, (B. আকন্দ S. अर्कपर्ण) Asclepias gigantea or calotropis.

Akur, (H. अंकड़ from अंकड़ना *ankadna*, to be cramped.) A bowel-complaint attended with griping or spasms; also eruptions.

Alari-novoo. An Enzootic fever of cattle and sheep in Madras.

Alawoota (B. ওলাউঠা, ওলা *olá*, descent and উঠা *uthá*, ascent.) Cholera morbus.

Alchara (B. আলচরা S. आलि *áli*, a ridge of earth dividing fields and चर *char*, to move, to graze). Falling sickness of cattle, megrims, vertigo, giddiness.

Altara, (B. আলতারা S. आलि *áli*, a ridge of earth dividing fields and तर *tara*, crossing). Falling sickness of cattle, megrims, vertigo, giddiness.

Amrah, (B. আমড়া S. अम्रातक *amrátaka.*) The hog plum, (Spondias magnifera).

Amun, (B. আমন vide Amun Dhan.)

Amun Dhan, (B. আমন ধান S. हेमन् *heman*, winter and धान्य *dhánya*, paddy). Winter rice, or that sown in July and August and reaped in December.

Andar-ka-matah, (U. اندرکامتا from P. اندر *andar*, inside and S. माता *mátá* q. v. mother). Internal small-pox.

Aoos, (B. আউশ vide Ause).

Apahra, (H. आफराद् *aphrai*, surfeit). A disease attended with distention of the stomach, swelling of the feet and face.

Apan, (B. অপাং S. अपाङ्क *apángaka.*) Achryanthes aspera,

Aphtha, (Gr. Αφθαι; from απτω, to inflame.) The thrush, small white ulcers on the tongue, gums, inside of the lips and palate, resembling particles of curdled milk.

Apri, (Same as Apahra q. v.) A term used in Bombay for swelled belly.

Arallu, (S. अरलु *aralu.*) 1. Bignonia Indica. 2. Ailanthus excelsa.

Areola, L. dim. of *area.*) in anat; the small interstices of cellular tissue; in surg: an inflamed ring around pustules.

Arutdars, (B. আড়ৎদার, আড়ৎ from S. आढकिक *ádhakika*, a warehouse and P. دار *dár*, who has.) A warehouse keeper, a forestaller.

Arrack, (A. عرق juice, distilled liquor). A spirituous liquor of India.

Ause, (B. আউশ from S. आशु *ásu*, quickly.) Rice sown in February and March, and reaped in August and September.

Avroe, (G. from S. अवरोध *avarodha*, impediment, restraint). A disease of which the prominent symptoms are swelling of the mouth and legs and difficulty of breathing; probably quarter ill.

Awal, (Ar. اوّل) First.

B.

Babheerung, (H. बभ्रुरङ्ग from S. बभ्रु *babhru*, tawny and रङ्ग *ranga*, colour.) A plant (Currant fruited embelia.)

Babool, H. बबूल from S. बब्बोल *babbola*. The name of a tree (Acacia arabica.)

Bachka, (Panj. बचका from बचकाना *bachkána*, anything small as pustules.) Sore mouth.

Badah, (H. बदा predestinated from P. بد *bad*, an evil or Ar. بدء *budah*, surprising.) Rinderpest.

Badee, (U. بادي from P. باد *bád* wind) windy. Hoven.

Badha, A grass.

Badla, (B. बादला S. बार्दल *bárdala*, rainy weather.) Disease of the feet, occurring in rainy weather.

Badmaish, بدمعاش from Ar. بد *bad*, wicked and معاش *mísh*, bold, strong. Disreputable person, criminal.

Bael, (B. বেল, S. विल्व *vilwa*.) The wood apple. (Aeglemarmelos.)

Bagdies, Anglicized plu. of Bagdi, B. বাগদি from S. वागदरिद्र *vagdaridra* speaking humbly and guardedly.) A low and servile caste of Hindus following unclean and out-of-door occupation.

Bagbharanda, B. বাঘভেরণ্ডা (Castiglionia lobata); Jatropha cureas.

Bagha or Baghi, (H. बाघा S. व्याघट्ट *vyághatta*, stirring, churning, friction.) 1. A disease of the bowels. 2. A disease which attacks the sole of the foot about the division of the hoof.

Baghara, (Panj. बघियारी *baghiári*, an instrument made of thin reed split at the end.) A hoof disease.

Baghea. A cattle disease in the Central Provinces characterized by a swelling of the neck and head.

Bagher, (Bhotia. बघेर)Hoof disease.

Boghi, Vide Bagha.

Bagmin, (Panj. बगमूंहा *bagmunhan*, relating to the face of the cattle.) A disease of the mouth.

Baghooli, (same as Bagher q. v.)

Baheejerrah. Canar. A corruption of the term Bayi-jarah. Foot and mouth disease.

Bahils, (H. बहली *bahli* from S. वहलिक *vahaliha*, an ox or वह *vaha*, a car). A two-wheeled car for riding in, not for baggage.

Bai, (S. वायु *váyu* wind.) Flatulency; wind colic.

Baidh, (Vide Beadh.)

Baigo. Hoof disease.

Baikra, see Bekhra.

Bail, (Panj. बजल *baul*, urine.) Retention of urine or some other urinary affection.

Bairuck, (H. वायुरुक्ष S. वायु wind and रुक restraint.) Wind colic.

Bajra, (H. बाजरा, S. बाट *vata*.) A species of millet. (Panicum spicatum).

Bakain, (H. बकायन S. महानिम्ब *máhánimba*.) A tree (Melia Sempervirens.)

Balia, (P. بلا *baláh*) misfortune. Plague.

Balun, (Panj. बालना *bálná* to cause to burn or from P. بالو *balu*, a tetter or بالو *balu*, a disease of the nail.) An eruptive disease or hoof disease.

Baneeah, (H. बणिया from S. बणिज *vanij*). Shop-keepers. Merchants.

Banjarees, (from S. बणिज् *banij*, trader.) Itinerant merchants.

Banspata, (B. বাঁসপাতা S. वेणुपत्री *venupatri*). A grass (Amaranthus artopurpureus or lancifolius.

Baoories, (B. বাউড়ি from S. वाराह *váráha*, belonging or relating to a boar) Hindus of a low caste, commonly by avocation swine herds.

Baree (B. বাড়ী S. वाटी *váti*.) House, a family residence.

Bari-ant, (H. बड़ीआंत, *badi* large, and *ánt* from S. अन्त्र *antra* gut, entrails). Blind gut, cœcum.

Batan, (H. बातान ; contr. of S. वातानुलोमन् *vátánuloman* passing wind.) Foot and mouth disease, attended with cough and stomachic derangement.

Batans, (H. बतान from S. वातायन *vátáyana* a shed.) Sheds in the open field for cattle to assemble at night.

Batan-walla, (U. والا, بتان from H. बतान *batans* and Ar. والا, *wálá*, a particle used in composition to denote a person who does any act or is charged with any duty.) A keeper of batans.

Batass, (H. बाताषा from S. वात *váta*, wind). An œdematous swelling or swelling filled with air.

Batassie, (Vide Batass).

Bathan, (H. बथान contr. of S. वत्सतरस्थान *vatsatara-sthána*, place for cattle or abbr. of यावसस्थान *yárásasthána*). Pasture ground.

Batu, (Vide Batan).

Bayi-jarrah, (Corr: of S. वायु ज्वर *váyujwara.*) Nervous fever.

Beadh, (S. व्याधि *vyádhi* disease). A disease of which the prominent symptoms are ulcerated mouth and dysenteric stools. Rinderpest.

Bedagi, (U. بےداغی from بے *be, priv.* and داغ *dágh*, mark). Without mark, scar or blemish.

Bedun, (H. बेदन from S. वेदना *vedaná*, smart pain). Rinderpest.

Beegha, (B. बिघा perhaps from S. विघस *vighasa*, food). A measure of land varying in extent in different parts of India, the standard *bigha* in Bengal is equal to $\frac{1}{3}$ of an acre nearly.

Beeroo, Medicine.

Bega. Foot and mouth disease.

Bekhra. (Same as Gorphoota or Baigs). Foot disease.

Benga, (B. बेङ्गा from व्यङ्ग *vyanga*, deformed, discoloration of the cheek). Inflammation of the vessels of the tongue followed by dysentery, generally cured by acupuncture.

Benga, or Paster bedna (B. बेङ्गा or पृष्ठेर बेदना: here बेङ्गा may be supposed to be derived from H. बङ्गा *bagan*, joint of a bamboo root). Pain in the joints of the back-bone.

Bepari, (B. ব্যাপারি from S. व्यापार *vyápara*, trade or traffic). A dealer, a travelling trader or pedlar.

Bewada, (B. ভুই আদা S. भूआर्द्रा). A plant (Hedychum Angustifolium).

Beylas, (from S. विल्ल, *bila*, marsh). Flooded lands.

Bhade, (B. ভেদ from S. भिद् to divide, in Bengal, the term signifies purging). Diarrhœa.

Bhadhal, (H. भद्दल or भद्दा). A grass growing in a poor soil, to the height of little more than a foot, making excellent fodder.

Bhagada, (Vide Bhagar).

Bhagar, (B. ভাগাড় from S. भगाल *bhagála* a skull). Place where dead cattle are thrown.

Bhagaree Jumma, (B. ভাগাড় জমা from ভাগাড় *bhágár* q. v. and جمع *Jamá;* rent). Rent for the right of skinning.

Bhagee, (H. भगी from S. भग *bhaga*, vulva). The wind colic or hoven.

Bhaug, (B. ভাগ S. भाग bhága). Portion, share.

Bhao, (S. भाव state, *Bazar bháo*, state of the market or current state, is a term applied in Bengal to cholera.) Rinderpest.

Bhao-ka-murza, (U. مرض کا بھاؤ from S. भाव and P. مرض *maraz*, disease). Disease of the time.

Bhawanee, (S. भवानी *bhawání*, a name of the goddess Durgá of which *Sitla* is supposed to be a form). Small-pox.

Bheel, (B. বিল S. विल *vila*, a hole). A lake; a swamp; low marshy ground.

Bhela, (B. ভেলা from S. अल्ला *ahvala*). A tree (Semicarpus anacardium).

Bhewanee, (Vide Bhawanee).

Bhokla, (H. भक्ला from S. भग्न *Bhagna*, broken and गल *gala*, throat). Tracheal inflammation attended with difficult deglutition.

Bhonda. A cattle disease in the Central Provinces.

Bhooknee, (Panj. भुकणी *bhukni* liter: space between two joints of a bamboo, भुकणीचलनी *bhukni chalni*, to have diarrhœa). A severe form of diarrhœa.

Bhool. Rinderpest in Bombay.

Bhoosee, (B. ভুষি S. बुस *busa*). Chaff; bran; husk.

Bhor, (Hind. भुरा). A grass (Rhizophora mangle).

Bhore, (same as Bhor).

Bhowra. Foot and mouth disease.

Bhulkandya. Rinderpest.

Bhung, (H. भङ्ग S. भङ्गा *bhangá*, hemp). An intoxicating preparation of hemp. (Cannabis Sativa.)

Bikra, (H. बिगड़ा spoilt from S. विकृत *vikrita*). Foot and mouth disease.

Bilooa, (Panj. बिलुआ worms in water probably from S. बिलवासिन *vilaváśin*, living in a hole). A disease produced by drinking worms in water.

Binohee (for Bimohee H. बिमोही S. विमोहन *vimohana*, fascinating, confounding). Fainting fit.

Bengabow, (B. বেঙ্গাবো compounded of Benga q. v. and বাঁত *byánta*, a vulgar term for mouth). Mouth affected with Benga.

Bircing, (H. बरसुङ्गा *barasunga*). A grass (species of Panicum).

Birki, (B. মৃগি,) Epilepsy.

Bish-bakoolier, (Assam. বিষবাকুলের). Purging and hard swelling of the joints.

Bissarce, (corruption of H. पसारा *pasará*, from S. प्रसार *prasára* distention). A disease characterized by swelling of the body, running from the nose, and watery evacuation.

Bissarah, (from S. विष poison) a cattle disease in Oudh.

Bissi, (H. विषी, poisonous). A disease generated by poison.

Bitan, (Same as batan q. v.).

Bitharoo, (H. बिथारू from S. व्यथा *vyathá* pain and P. روي *rui*, face). Swelling of the jaws.

Bodul-khoor, (U. بدل خور from Ar. بدل, *badál*, pain in the feet and S. खुर *khura*, hoof). A contagious hoof disease.

Bogma, (Panj. बघमां *baghmán* throwing a spear). Quarter ill or black quarter.

Bola, (Panj. बला from Ar. بلا *bala*, misfortune, calamity). A murrain.

Bonani-fields, (B. বোনানী *bonani* from S. বপন *vapana*, sowing seed). Low lands bearing plants from seeds sown in them.

Bookher, (U. from Ar. بخر *bukhar*, steam). Fever.

Borelie, (H. बडेली signifying a wild hog, the hoven giving a bloated hog like appearance). Hoven attended with purging.

Boropera, (Vide Burrapira).

Bosonto, (B. বসন্ত S. বসন্ত *vasanta*). Small-pox. Rinderpest.

Bosurgha, (U. بوصيرگاس *bowsirghás*, from Ar. بوصير *bowsir*, piles and S. घास *ghása*, grass). A grass, common mullein.

Bothon, Vide Bathan.

Bothoso, Vide Bathan.

Brahminic, (Anglicized S. from ब्राह्मण *Bráhmana*). Relating to a Brahmin, or a man of the 1st order or caste of Hindus.

Brynga. A disease in which cattle gradually wastes away.

Buddabhao, (H. बडाभाव from S. बड *vadra*, great and भाव *bháva* state). Great epidemic.

Budi, (P. بدي evil). A murrain.

Buksah, (B. বাক্‌সা). A sort of grass. Smooth Rottbœllia (Rottbœllia glabra).

Bunds, (B. বাঁধ from S. बन्ध *bandha*, to bind). A bank or dyke, a bank for confining water or forming a road way over inundated fields. Boundary of a field or village.

Buniahs. Vide Baneeah.

Bunniahs. Vide Baneeah.

Bupra. A kind of cattle disease in the Central Provinces characterized by an affection of the throat, abstinence from food, drooping of the head, and difficulty in breathing.

Bur. (Panj. बर् contr: of बरण *barun*, swelling from a boil or other cause). A disease in which the body of an animal swells.

Burkundaz, (U. برق انداز from Ar. برق *bark* lightning and انداز *andáz*, who casts; a matchlockman). A native of Hindustan who acts as a door-keeper, a guard, a watchman and an escort.

Burunga, (B. বরাঙ্গ). A grass. (Panicum Uliginosum.)

Burra-Azar, (U. بڑا ازار S. *radra*, great and P. ازار *az ár* disease). Serious disease. Rinderpest.

Burradook, H. बडादुख from S. बड् *vadra*, great and दुःख *dukkha*, pain). Severe pain. Rinderpest.

Burrapera, (B. বড়পোড়া or H. बड़ापोड़ा from S. बड् *vadra*, great and पीडा *pídá* disease). Morbus periculosus. A kind of small-pox of which the prominent symptoms are swelling of the throat and mouth.

Burra-rog, (B. বড় রোগ from S. বড *badra*, great and রোগ *roga*, disease). Same as Burrapira.

Burree, (H. बरी strong, violent or Ar. بر *bar*, waste). A form of dysentery.

Burree, (Panj. बरुरी *baruri*, small pimples). An eruptive disease.

Burwa-Bazar, (H. बुडवाबाजार from S. बुडवा *budavâ*, aged, old and Bázár) old market.

Bushunto. (Vide Bósonto.)

Bussunto. (Vide Bosonto.)

Buttee-Azar (from H. बटना S. वट् *vat*, to twist, to tie and P. آزار *ázár*, disease). Costive state of the bowels conjoined with affection of the brain.

Byha, (Corr. of S. वायु *váyu*, morbid affection of the windy humour). A disease exhibiting symptoms of furious madness.

Bylee. A kind of grass.

C.

Cagelly. A shrub.

Cala, (S. काल). A tree (Cardanthera triflora.)

Carapaula, (B. from S. करपाल or करवाल *karabála*, a finger nail) A hoof disease (?)

Chahan, (from H. चहना S. चह *chah*, to afflict and ना from नस *nas*, nose). Bleeding of the nose.

Chamars, (H. चमार, from S. चर्मार *charmára*). Men of low caste, whose business is working in hides and leather ; curriers, tanners, shoemakers.

Champee, (B. and V. d. চাঁপি). Inflammation of the throat or sticking of a foreign substance in the throat, producing difficulty in deglutition.

Chamroara, (H. चमडाउधारा from S. चर्म *chamra*, skin and उद्धारण *uddhárana*, flaying). Place where dead cattle are thrown.

Chamatsia, (H. चमटसिया tough). Same as chapchapia, q. v.

Chandia, (S. चण्डी goddess *Durgá*). Small-pox.

Chaukhoora, (H. चोखुरा from चौ *chau*, a grinding tooth and S. खुर *khura*, hoof). Foot and mouth disease.

Chapchapea. (Vide Chapchapia.)

Chapchapia, (H. चपचपिया from S. चूप् *chup*, to move slowly). Inflammation of the soft parts of the hoof, with loss of appetite.

Chapla, or Chablá (H. चवला Contr. of चवलाना *chablánâ*, to chew slowly from S. चुब्र *chubra*, the face). Disease of the mouth.

Chaprassi, (H. चपरासी from चपराश *chaprás*, a badge). A messenger or other servant wearing a *chapras*.

Charal, (B. চাড়াল from S. चण्डाल *chandála*). An outcast, a man of the lowest caste of Hindus.

Chasa, (B. চাষা from S. चष *chash*, to hurt [the earth] or from P. چش *chash*, a pile of corn). A cultivator, a ploughman, a husbandman.

Chechuck, (P. چیچک). Small-pox.

Cheelum, (H. चिलम). The part of a *hukka* or tobacco-smoking apparatus, which contains the tobacco and fire, it is also loosely applied to the apparatus itself.

Chemur, (Panj. चेमर). A sort of grass.

Chendooroga, (S. चण्डरोग *chandaroga*, violent disease). Rinderpest.

Chera, (H. चिरा from H. चिरकना *chirakná*, to have scanty stool). Scanty liquid stools, sometimes dysenteric, attended with inordinate thirst and reddish hue of the skin.

Cherra, (Vide chera). Rinderpest.

Chhye, (H. छैया *chhaiá*, victim). Rinderpest.

Chickna, (H. चिकना from S. चिक्कण *chikkana*) clean, glossy.

Chimree, (Panj. चिमडि). A sort of *doob* grass.

Chireta, (B. চিরেতা from S. चिरतिक्त *chiratikta*). Gentiana chirayta.

Chirhooa. An abbreviation of the word chitra-hooah, q. v.

Chitka. Vide chutka.

Chitra-hooah, (H. चित्रहोनहार *chitrahonhár*, surprising fate). A term applied to cholera.

Choamussia, (H. चमुषा from S. चम् *cham*, to destroy and उषा *ushá*, a cow). Foot and mouth disease.

Chokur, (H. चोकर from S. चोचक *chochaka*). Husk of wheat or bran.

Chob, (H. चव, S. चव्य *chavya*). A variety of pepper. (Piper chavya).

Choltibooja, (H. चलतिबुझा, चलति *chalti*, flow, motion and बुझा from बुझाना *bujhánd*, to extinguish). Constipation and retention of urine producing hoven.

Cholum, (H.) A plant used as forage.

Choodee, (Panj. चुडी from चुडीना *chudaund*, to widen, to swell). A disease of the throat.

Chook, (Nepalese from S. चुक्र *chukra* vinegar made by acetous fermentation). Lime juice thickened by boiling. The Indian sorrel.

Choome, (H. चुम from S. चुम्ब *chumb*, to kiss). Sticky lips. Mouth disease.

Chooneah. (Vide Chunneah).

Choora, (H. चुडा from S. चिपिट from चट *chat*, to flatten). A kind of food, flattened rice.

Chooras, (Panj. चुडा). A term applied to mehters (sweepers) in Punjab, the females remove the cow dung.

Chowa, (B. চোয়া contr: of চোআলী *choáli*, the jaws). The mouth disease.

Chowdhry, (B. চৌধুরি, H. चौधरी from S. चतुर्धुरीण *chaturdhúrina*). The headman of a village. Holder of landed property, classed with a zemindar or talukdar. A hereditary title.

Chowkeedar, (U. چوکیدار from H. चोकी *chowki*, seat, station of police or customs, a watch or guard, and P. دار *dar*, one who holds, possesses or keeps). A watchman, a police or custom peon. A village watchman.

Chuckee, (H. चक्की, the lounge from S. चक्र *chakra*, a circle). A form of megrim in which the animal falls down after making a circular motion.

Chucker, (S. चक्र *chakra* a circle). A disease among cattle characterized by general uneasiness and giddiness.

Chuckler. A class of low people in Madras like Chamars or Domes. People in charge of villages.

Chultah, (B. চালতা). Dillenia Indica or speciosa.

Chung-Sakha. (Bhutia, *chung*, west and *sakha*, salt.) A country in the west (so called by the Bhutias) whence salt is brought to Lassa.

Chunneah, (Bhutia, from the name of the country Chungsakha, whence the disease comes). Dysentery with fluid discharges from the nose and mouth.

Chunum, (H. चुना from S. चूर्ण). Lime.

Chupka, (H. चपका from S. चप् *chap*, to grind). Diarrhœa attended with ulcerated mouth and tracheal inflammation.

Chuppari-niovu. A term used in Madras for Black-quarter or quarter-ill.

Chuppatees, (H. चपाती from S. चपट *chapat*, the palm with extended fingers). Thin cakes of unleavened bread moulded by pressure of the palms.

Chupporees, (Assam. চাপুরি H. चप्पन *chappan*, a lid or cover from S. चप *chap*, to press). Highlands on or near rivers.

Chupraha, (H.) A sort of cattle disease in Oudh, something like cholera.

Chur, (S. चर *chara*, to rise). A sandbank or island in a river, deposited by the water.

Churee, (H. चरि from S. चर *chara*, to eat, to rove, or P. چرا *charú*, pasture). Pasture land.

Churh, (H. चढ from चडढा *chadhá*, the groin ; a bubo, or from चढना *chadhná*, to swell). Foot and mouth disease.

Churrus, (H. चरस्). Extract of Indian hemp used for smoking.

Chutka, (H. चटका from S. चट *chat*, to break, to pierce, to injure). Discharge of blood from the bowels and frothy matter from the mouth. A sort of small-pox.

Comaree, (P.) خمار *khumár ?* A name given to foot and mouth disease.

Conjee, (B. কাঁজি, H. कांजि S. काञ्जिक *kánjika*). Sour gruel, water of boiled rice in a state of spontaneous fermentation.

Coondoos, (S. कुण्ड *kunda*). Members of a caste said to be the adulterous offspring of a Brahman and Brahmini ; also the cognomen of certain mixed castes.

Cooksa, (H. कुकसा B. কোকশিমা) *Celsia*. Coromandeliana.

Culmee-sak, (B. কলমী শাক, from S. कलम्बी *kalambi*). An aquatic plant (Convolvulus repens).

D.

Dab, (H. डाब). A grass (Poa cynosuroides).

Dabah, (Panj. दाब pressing down, depression). Cough.

Dabee-ki-roora, (H. देवीकिरोडा *roda* or brick fragment *i. e.* a pelt, a blow of the Devi, goddess). Vasanta, small-pox.

Dad, (B. দাদ from S. দদ্রু *dadru*). Ringworm.

Dagi-hides, (Dagi from P. داغ *dágh*, mark). Marked or damaged hides.

Dahee, (H. दहि from S. दधि *dadhi*). Curds.

Dak, (H. डाक or ढाक *dhak*). Name of a plant in Oudh. (Butea frondosa ?)

Daka. (Vide Dakha.)

Dakaha. (Vide Dakha.)

Dakha, (H. डाका *dák*,) perpetual vomiting; according to some, the disease is so called from the animals attacked with it, dying within the first stage *dak*). An infectious disease characterized by the swelling of the throat, constipation and constant discharge from the mouth.

Dakree, (H.) This term is applied to a system of poisoning cattle in Tirhoot.

Dalpoorees, (H. दालपुरि *dálpuri* from S. दाल *dála*, pulse, and पुरिका *puriká*, cake). Wheaten cakes with beaten pulse, fried in ghee.

Damragoroo, (B. দামড়াগরু from S. দম্য *damya*, a steer ox). A bullock.

Dard, (P. درد *dard*, pain or H. from S. दद्रु *dardru*, herpes). 1, a painful disease; 2, a cutaneous disease.

Darmoj. (Vide Darmooj.)

Darmooj. (A Corr. of P. دارموش *darmush*, lit. a gibbet for the mouse, it being a metaphorical equivalent for مرکموش *merkmush*, lit. death to the mouse, which, according to some authority, is the Persian word for a crude form of arsenic.) Red sulphuret of arsenic.

Daroga, (P. داروغ *darogh* an overseer). The chief native officer in various departments under the native Government. Under the British Government, a police officer.

Darogah. (Vide Daroga.)

Darunga, (H. दोरङ्गा from S. द्विरङ्ग *dwiranga*). A kind of two colored grass.

Data, (H. ढाटा *dhátá*, a handkerchief tied over the head and round the cheek to which it gives a swollen appearance). A disease characterized by the swelling of the cheeks.

Datoora, (H. धतुरा from S. धत्तूर *dhattura*). A plant, Datura Fastuosa or Solanum Dulcamara.

Debee, (S. देवी *devi* goddess). The goddess Sitlah presiding over small-pox. Rinderpest.

Debee-ki-rooriah. (Vide Dabeé-ka-roora.)

Debris, (from Fr. Debreé). Fragments.

Deodar-oil, (S. देवदारु *devadáru*, Pinus deodar). Oleum cedrus deodara, oil of a kind of cedar growing in India, valued for its timber.

Desi, (H. देशी from S. देश *desa*, country). Belonging to, or produced in, the country.

Devi, (S. देवी goddess). (Vide Debee.)

Dewalee-poojah, (H. दीवालिपूजा S. दीपालीपूजा *dipáli*, a row of lamps, and *pújá*, worship). A festival of the Hindus in September and October.

Dhadharya, (H. ढंढोरिया a crier). Mouth disease.

Dhamun, (Panj. धमाहां *dhamáhún*). A kind of wild grass. (Pennisetum Cenchroides.)

Dhan, (B. ধান S. धान्य *dhánya*). Rice plant or rice before the paddy is separated from the husk.

Dhatura. (Vide Datoora.)

Dhersi, (B. ধেড়শী from ধেড়ান *dheḍána*, to purge or pass loose stools, S. भाड् *phráḍ* to split). An infectious disease, the symptoms of which are those usually assigned to Bosonto.

Dhoob. (Vide Doob.)

Dhoobla, (H. दुबला from S. दुर्बल *durbala*). Weak.

Dhoona. (Vide Dhuna.)

Dhoop, (H. धुप). Same as Dhoob or Grislea tomentosa.

Dhowrera, (H. धौरेर Corr. of S. धौरेय *dhawreya*, a beast of burden). A particular breed of cattle in Oudh.

Dhukka, (Panj. धुख *dhukh*, ignition, to have a burning sensation in the feet, from S. धुक्ष *dhuksh*, to kindle). Foot and mouth disease.

Dhuna, (B. ধূনা S. धूपन *dhúpana*). Resin especially that of the Shorea robusta.

Dhupi, (H. धोबि from S. धाव *dhab*, to cleanse). Washerman.

Dhursi. (Vide Dhersi.)

Dila, (Panj. ढीला *dhílá*). A sort of grass.

Doddah-rogah, Karn. डोड्डारोग (same as Burree Azar, which see) Rinderpest.

Dọd-rogue. (Vide Dodda-rogah.) Rinderpest in Madras.

Doem, (P. دوم *doyam*). Second.

Dol. Same as Dull.

Dolonees, (Assamese from S. दलनी *dalaní* clod, earth). Low lying large grass plains.

Dome, (B. ডোম). A low class of Hindus; they are usually by avocation, makers of wicker-works, baskets, &c., dog-killers. In some places they perform the lowest offices.

Dome-cattle, (B. ডোম). Cattle used by the Domes.

Domma-pegooloo, (Tel. from P. دمہ *damá*). Asthma.

Doob, (H. दुब from S. दुर्व्वा *durvá*). A grass. (Agrestis linearis or Cynodon dactylon).

Doobaree, (H. डोराब्यारा *dorábyárá*). A grass. Upright panic grass. (Panicum Verticillatum).

Dooksoa, (H. दुःखसवा from S. दुःख *dukkha*, pain and सवा *sawá*, with a quarter more). Same as Burradook, q. v.

Doopree, (H. दोपहरिया, B. দুপহরিয়া). A grass (Pentapetes Phœnicia).

Doorgrapalooi, (H. डारागिरापालुइ, डोरागिरा *doragira*, q. v. and B. পালুই *pálui*, a store-house). Cluster of thread-worms.

Doongra, (Hill lang. Corr. of H. डांगर *dángara*, a lean beast). A disease produced by insufficient food. Loss of flesh.

Dooragera, (H. डोरागिरा, डोरा *doré*, thread and गिरा *giré*, fallen). The maw or thread-worm.

Dosalin, (Nepalese Corr. of S. दशलक्षण *dasalakshana* ten signs or symptoms). Rinderpest.

Dosauds, (H. दोसाद् from S. दौःसाधिक *dauhsádhika*). Hog-keepers, men employed as executioners, to remove dead bodies.

Dubb. (Vide Doob.)

Dubra. Perhaps same as Doobaree.

Duffader, (P. دفعدار *dafádár*). Commandant of a body of horse; head of a party of police, a police officer. In Bengal a person at the head of a number of persons whether labourers or soldiers.

Dukhina. (Vide Dukina.)

Dukina, (H. दखिना from S. दक्षिण *dakshina*, south) of, or appertaining to the south.

Dukra. A kind of poison.

Dull, (H. दल). A grass. (Panicum Stagninum).

Durd-galghotona, (Panj. दरदगलघोटणा from P. درد *dard*, pain, and S. गल *gala*, throat; घोटणा from S. घट *ghat*, to injure). A most painful disease of the throat.

Durba (H. दूर्वा). A grass. Some think it different from Doob, and identify it with Panicum dactylon.

E.

Ekra, (B. আঁকড়ি). A twiner. (Vicia Sativa.)

Entozoa, (Gr. εντος within and ζωον animal). A general name for those parasitical animals which infest the bodies of other animals.

F.

Fantoora. Erroneously printed for Tantoora which see.

Fasciola Hepatica, (Fasciola dimin. of Lat. *fascia*, a bundle and Hepatica from Gr. ηπαρ the liver). A small flat flounder-like worm about the size of the nail of the little finger formed very frequently in the bile ducts of sheep and oxen.

Fashi, (from P. فاشی diffused). A cattle disease which breaks out in summer in Bombay.

Floko, (Bhot) Rinderpest.

Flookho, (Lepcha) Rinderpest.

Fool-baga, (B. ফুলে বাগা, S. फुल्ल *phulla*, distended and H. बाघा *bagha*, q. v.). A mortal disease in which the whole body swells.

Foshora, (H. फुसीड़ा from S. स्फाय *sphíy*, to grow large). A disease having the symptoms of Bosonto, with the additional character of swollen mouth and throat.

Fut-dagi, (Urdu. فوٹ داغی from S. स्फुट *sphuta*, torn and P. داغ *dágh*, mark). Marked with a cut.

G.

Gabouna, (H. गवौणा Contr. of S. गावः *gávah*, cows and ओण *ona*, lessening). Rinderpest.

Gahasha, (Contr. of S. गलहस्त *galahasta*, throttling). A disease of cattle in Madras in which the throat becomes affected.

Galghattoo, (Panj. गलघाटा *galghotá* from S. गल *gala*, throat and घट् *ghat*, to injure; choking sensation). A disease of which the prominent symptom is a sensation of suffocation.

Galghotona. Vide Galghattoo.

Galsundee, (Contr: of S. गलशुण्डिका *galasundiká*, the uvula or soft palate). A throat disease.

Gardooa, (H. गरदुआ from गरा S. गल *Gala*, throat and H. दुआ from S. द्वि *dwi*, two; double the length of the throat). A mortal disease in which the throat is inflamed and breathing becomes difficult.

Garmi, (P. گرمی heat). A disease produced by, or evolving, great heat.

Garri, (U. گری from P. گریدن *garidan*, to itch). An eruptive disease.

Garriwan, (H. गाडिवान from गाडि a carriage). A coachman, the driver of a coach or car.

Garrywans. Vide Garriwan.

Gatherewan, (H. घांटोरोंआ, *ghínti*, the larynx and *roṇá* hair). Hair growing in the throat of cattle.

Gaurer, (H). A sort of grass.

Ghanee, (H. घनि from S. घुण *ghun*, to turn round). An oil mill.

Gharies, (H. गाडि from गड *gada*, a cavern). Carts, coaches, carriages.

Ghascar, (B. घासकर S. घास *ghása*, grass and कर *kara*, a tax). A tax on grass or forage.

Ghat. Vide Ghaut.

Ghat-sarful, (S. घाटशरफल, घाट *ghát*a, neck and शरफल *saraphala*, barb of an arrow) Swelling of the [neck.

Ghat-surreep. (S. घाटशरारोप, घाट *ghát*a, neck and शरारोप *saráropa*, a bow). Swelling of the neck and throat.

Ghaut, (B. घाट S. घट्ट *ghatta*). A quay, wharf, landing-place.

Ghee, (B. घि S. घृत *ghrita*.) Clarified butter.

Ghooldia, (Panj. contr. of Galghotona, which see).

Ghootko. Same as ghuttiar.

Ghoor-Ghoor, (B. घूर,घूरा S. घुर्घुर, *ghurghura*, a worm burrowing in the skin, guinea-worm, Dracunculus). A sort of ulcer.

Ghooroa, (H. घुरुआ from S. घुर *ghur*, to be hideous or from घाड़ neck). Swelling of the neck and belly.

Ghorey, (H. घोरे from घुरा *ghurá*, sweepings). A fatal disease in which slime is discharged from the mouth.

Ghoorka. Same as Ghurka.

Ghorka. Rinderpest.

Ghuni, (H. घुनि from S. घुन *ghuna*, an insect which pierces small holes in wood). An inoculator.

Ghunt, (S. घण्ट *ghanta*). Trumpet flower (Bignonia Suaveolens).

Ghurka, (.H. घुरका). Inflammation of the throat of the ordinary type.

Ghurka, (B. घूर from S. घूर्ण *ghúrna*, to wheel, to turn round). Giddiness; vertigo.

Ghurrees, (B. घड़ी from S. घटिका *ghatiká*). A measure of time, being one-sixtieth part of a day and night. Any instrument for computing or announcing time.

Ghutt, (from S. घट *ghat*, to kill or घट्ट *ghatta* to spread). A Rinderpest.

Ghuttiar, (H. घांटीयार from घांटी *ghánti*, the larynx). A disease of the throat in which the animal is unable to swallow.

Goakhana. Vide Gowkhana.

Goalla, (B. गोआला from S. गोपाल *gopála*). A milkman; a cowherd.

Gobordhana-jatra, (S. गोवर्द्धनयात्रा *govardhana yátrá*; गोवर्द्धन *govardhana*, a mountain in Mathura whereKrishna used to graze his cattle and यात्रा *yátrá* any holy festival). Celebration of the worship of the mountain at certain periods of the year.

Gobosonto, (S. गोवसन्त, गो *go*, a cow and वसन्त *vasanta*, pox). Cowpox.

Gola, (S. गोल otherwise known in Bengal as मयनाफल *mayanáphal*). A tree, Vangueria Spinosa.

Goli, (Panj. गोली from S. गोल *gola*, a ball). Quarter ill. The disease is called *goli*, because people say God strikes the part as it were with a bullet, and the part swells up.

Gola-foola, (B. গলা ফুলা, S. गल *gala*, throat and फुल्ल *phulla*, expanded). Swelling of the throat produced by feeding on marshy grass.

Gola-fula. Vide Golafoola.

Golahdars, (U. گولادار from S. गोल *gola*, round, a granary, and P. دار *dár*, one who has or keeps). A wholesale grain merchant or salt dealer, one who keeps a store.

Gola-kantaki, (S. गलकण्टकी *galakantaki*, lit: thorny throat). Inflammation of the throat.

Golepatta, (B. গোলপাতা) Amphidonax glabra?

Gomasta, (P. گماشته *gumáshtah*). An agent, a steward, a confidential factor, a representative. An officer employed by zemindars to collect their rents.

Gomoti, (S. गोमती) the name of a river. H. a place where carcasses of cattle are thrown.

Googlanee, (H. गुंगुलाना *gungulánd*, snuffling). The gootee (small-pox) so called in the Sunderbans, on account of the peculiar grunt of the animals attacked with it.

Gooldan, (U. گلدان a round candle-snuff bowl). An immense swelling of the throat.

Goolier, (P). A species of wild fig tree.

Goonda-musara, (S. गोमसूरिका *gomasúriká*). Cow-pox.

Goor, (S. गुड *guda*). Treacle, Molasses.

Goorgoora. A cattle disease. Same as ghoor ghoor (?)

Goorha. Same as khoora.

Goor-khoor, (A corr. of ghoorghoor, which see).

Gooroonda, (Tel: *goruntá*). A shrub, Lawsonia inermis or spinosa.

Gooshela, (H. गुषेला from गो *go*, cow and उसल्ना *usalna*, to be agitated). A term used in Jhansi for cow pox and hoof disease.

Gootee, (B. গুটি from S. गुटिका *gutiká* a pill, a bolus). Small-pox.

Gootee-niksar, (H. गुटिनिकसर from S. गुटिका *gutiká* small-pox, and निष्कासित *nishkásita*, breaking-out). Breaking out of the gootee or small-pox.

Gorara. Vide Gurera.

Gorochana, (S. गोरोचना गो a cow रोचना *rochaná* from रुचि to shine). 'A bright yellow pigment prepared from the urine of a Cow or vomited in the shape of scibulae by the animal' or found in the head of some cattle, used as a paint or medicine.

Gorphoota, (H. गोडफुटा, गोड् *goḍa*, the foot and फटा *phata*, a crack). Hoof disease.

Gossain, (B. গোঁসাই S. गोस्वामी *goswámi*). A religious mendicant in general.

Goti. Vide Gotee.

Gowalas. Vide Goalla.

Gowan, (H. गवाना to cause to sing गांगन *gángan*, to groan). Name of a disease which causes the animal to groan.

Gowkhanah, (U. گوخانه from S. गौ: *gauh*, a cow and P. خانه *khanah*, a house). A cow-pen.

Gowthon sitlah, (Corr. of S. गोस्तनशीतला, from गो *go*, cow, स्तन *stana*, udder, and शीतला *Sitalá*. small-pox). Confluent small-pox.

Guggula, (S गुग्गुल). A sweet scented resin, *Bdelium* or exudation of the Amyris agallochum.

Gulsooa, (S. गल throat and A. سوء *sua*, afflicted). Itching of the throat, sore throat.

Gumbher, (S. गम्भारी). A tree, Gmelina arborea.

Gumla. Vide Gumlow.

Gumlow, (B. গামলা *Gámlá*). A vessel of baked earth.

Gundha-beroza, (Beng. Corr. of S. गन्धविराज *gandhabiráj*, lit. splendour of smell). Venice turpentine.

Gundwa, (H. गन्ह्वा from S. गन्ध *gandha*, smell). Infectious.

Gunja, (B. গাঁজা H. गाँजा from S. गजाशन *gajásana*; गज *gaja*, elephant and अशन *asana*, food). The hemp plant, Cannabis Indicus or sativa.

Gurera, (Panj. गरारा *garárá*, gargling). A term used in Jhansi to designate a swelling of the throat, and discharge from the nostrils.

Gurduha. Same as Gardooa, q. v.

Gurh, (Panj. गढ *gadh*). A kind of coarse grass.

Gurrah, (B. ঘড়া from S. घट *ghata*). A high waterpot or pitcher, earthen or metallic.

Guru, (S. गुरु). A spiritual guide.

H.

Hacoo, (H. हिक्का *hikká*, hiccough). Throat disease.

Haiza, (U from Ar. هيضة indigestion). Cholera. Rinderpest.

Halali. (Vide Hullali.)

Halwais, (P. حلوای *halwai*). Confectioners. Makers of halwa or sweatmeat.

Hanja, (H. हङ्गा from S. हं *hang*, pleasure and ज *ja*, generator). Grazing ground.

Haolia, (from P. حول *hawal*, agitated). A cattle disease in Bombay, the symptoms of which are diarrhœa and gradual enlargement of the lungs.

Hapadhura, (H. हपाधुरा, from हापना *hánpná*, to pant, and धुरीण *dhurína*, a beast of burden). A cattle disease of which the prominent symptom may be panting or some pulmonary affection.

Hári, (B. हाड़ि *hádi*, S. हड्ड *hadda*). A man of the lowest caste, a sweeper, a night-man.

Hari, (S. हरि from हृ *hri* to seize). The deity *Vishnu*, or considered same as *Krishna*.

Hatchita, (B. हातचिट्ठा H. हातचिट्ठि from S. हस्त *hasta*, hand and चिट्ठ *chith*, to send off). A letter or note or account avouched by the hand.

Hats. Plur. of Hát (B. हाट from S. हट्ट *hatta*). Markets, fairs.

Haths, (Plur. of Háth H. हाथ *háth* from S. हस्त *hasta*, hand). Cubits.

Haut. Vide hat.

Hávali. Vide Haolia.

Hávalia-rog, (Vide Hoolia.)

Havildar, (Corr. of P. حوالهدار *hawálahdár*, one holding any office or trust). A native military officer of inferior rank.

Heabillai, (H. हियाबिल्लाद् lit. Cat in the heart). Cough, trembling.

Heri-berri, (U حريبرج *haribárh* from S. हरित् *harit*, greeen and برج *barh*, affliction, disease). Rinderpest in which the stomach is full of green water.

Hierey-byani, or Hyrbyali (V. حيربيالے from P. حيرم *hyram*, a cow and بيال *byyal*, weak). Rinderpest.

Hierey-Bialee. Vide Hireybyani.

Hija. (Vide Haiza).

Hilsa, (H. हिलसा S. द्लोश). A fish, Clupea alosa.

Holholia, (B. हलहलिया slack from S. ह्वल to move). A disease in which the animal's flesh hangs loosely or in which it rolls, tosses or shivers.

Holoncha, (H. Corr. of S. हेलञ्चा *halanchá*). An aquatic plant (Hingcha repens).

Hom, (S. हेाम *homa*, i. e. ह्व *hu*, to sacrifice and मन् aff.) A burnt offering to the gods, the casting of clarified butter into the sacred fire, accompanied with appropriate *mantras*.

Homas, Anglicised plu. of *homa*.

Hooleuk, (Panj. ह्वबकी *hubki*, hiccough). A throat disease.

Hooka-tobacco, (from Ar. حقه *Hakkah*, [a cup] used for a tobacco pipe). A preparation of tobacco for smoking in a hukka or smoking apparatus.

Hooka-water, (from Ar. حقه *Hukkah*). Water of a *hukka* or smoking apparatus.

Hoolka, (H. ह्वलका from ह्वलकानां *hulkárná* to set on, as a dog on a bull). A term applied to cholera.

Horapjeera, (U. حرپيزر from Ar. حرّ *harr*, heat and پيزر *pizar*, a disease). A cattle disease in which heat of the skin is one of the prominent symptoms.

Hotomo. (Hill lang.) Swelling of the cheek and throat, generally ending fatally.

Hotomotana. (Hill lang.) Swelling of the glands of the throat.

Hoven. A cattle disease; a collection of wind in the rumen.

Hubuk. (Vide Hoobuk).

Huldie, (H. हलदि Corr. of S. हरिद्रा *haridrá*) Turmeric (Curcuma longa).

Hullalee (Ar. حلالے legitimate). Slaughtered hides.

Hurderphool, (H. हरिद्रा फुल compounded of हरिद्रा Turmeric and फुल [from S. फुल्ल *phulla*, to blossom] a flower), flower of Turmeric.

Hurrianah. A disease of the lungs in Punjab.

Hurtul, (S. हरिताल *haritála*). Yellow sulphuret of Arsenic.

Huzoor. (A term adopted in all the dialects of India from Ar. حضور *hazur*). The presence, the royal presence, the presence of a superior authority. A man of rank or superiority.

I.

Ijut, (A. عزت Izzat). Honor.

Ikore. A sort of grass, same as Ekra, q. v.

Illaqua, (Adopted in most dialects of India from Ar. علاقه *álákah*). Dependency, connexion, property, estate, jurisdiction.

Indra, (S. इन्द्र from इद् to have supreme power). King of the Hindu gods.

Ishal, (P. ایشال, drop by drop). Diarrhœa.

Izardar, (A term used in all the dialects of India from Ar. اجارادار *ijárádár*). A farmer, a lessee.

Izaradar. Vide Izardar.

J.

Jahani, (P. جہانی relating to the world, spread all over the world). A form of Hija or Rinderpest.

Jammai, (U. جماي adopted in most dialects from Ar. جمع *jama*, rent). Rent bearing.

Jaria, (H. जड़िया *jaḍiá*, lit: a jewel setter). A term applied to the disease in which the glands are enlarged.

Jarrooa. A kind of wild grass which grows in Oude.

Jatay, (H. जटाय Contr. of जटामांसी *jatámánsi*). Indian spikenard (Valeriana jatamansi).

Jat-byes, (H. जातभाइ *játbhái* from S. जाति *játi*, caste and भ्राता *bhrátá*, brother). A brother by caste, one of the same caste or tribe.

Jauns, (Ar. جان a rendering of S. जीवन *jívana*, life, in its metaphorical signification of water). Rivulets.

Jeera, (H. जीरा S. जीरक *jiraka*). Cummin seed.

Jemadar, (U. جمعدار *jamádár* adopted in most dialects from Ar. جمع *jamá*, a collection, a troop, and دار *dar*, one who holds, or has charge of). The chief or leader of any number of persons. In military language a native subaltern officer.

Jepbaj, (U. جفاي from P. جفا *jafá*, trouble). A cattle disease characterized by swelling of the throat.

Jheel, (B. झील). A shallow lake or morass.

Joh, (S. यव *yava*). Barley (Hordeum Hexastichon).

Johorbow. (Perhaps same as زهرباد *zaharbad*). A sort of cattle disease.

Jonkee, (H. जोंकि) from जोंक *jonk*, leeches). A disease produced by small leeches in the stomach and liver of animals.

Jooboos, (Nepalese). A cross between the cow and yak.

Jora, (S. ज्वर *jwara*). Fever.

Joran. From S. ज्वर *jwara*). Fever.

Jowa, (P. جوا lit. valley.) Cysts.

Jowar. (Vide jowara).

Jowara, (H. जवारा *jawárá*). A species of millet. (Holcus sorghum).

Jugudumba, (S. जगदम्बा from जगत् *jagat*, world and अम्बा *ambá*, mother). A name of the goddess Durga, a form of which, *Sitalá* is said to preside over small-pox, hence small-pox.

Jumma, (adopted in most dialects from Ar. جمع *jama*). Rent payable by a cultivator or zemindar.

Jungles, P. جنگل woods, thickets, any tract overrun with bushes or trees.

Junka, (H. जुंक). A sort of grass, Sida Humilis.

Jurra, (U. جڑا from Ar. جر *jarr*, drawing or from جریت *jarit*, a flow of water). A sort of cold with flowing from the nose.

K.

Kacharees, (H. कचार or कछार *kachar* or *kachchar* from S. कच्छ *kachchha*, moist lands; land lying low along the banks of rivers, also alluvial formation or deposit, hence the district called Kachar). The people of Kachar.

Kafoor, (P. کافور *kafur* S. कर्पूर *karpura*). Camphor.

Kalajarah, (S. कालज्वर *kálajwara*, काल *kála*, death and ज्वर *jwara*, fever). A fatal fever brought on by foot and mouth disease.

Kala-neemuck, (U. کالانمک from S. काल *kála*, black and P. نمک *nemak*, salt). Impure salt.

Kalberri. A term applied to foot and mouth disease in Bombay.

Kali, (S. काली). The name of a goddess, wife of Siva, so named from her black complexion. Same as Devi or Dúrga.

Kalka, (P. کاک *kalk*). A small sort of inferior melon.

Kalye, (H. कलाइ S. कलाय *kaláya*). Vetches, peas, pulse, leguminous seeds in general.

Kameela, (H. कमील S. काम्बोज, केशर Rottlera tinctoria). A medicinal powder consisting of the glands adhering to the capsules of the plant.

Katila, (H. कतुल S. कण्डुकरी *kandukari*). Carpopogon or Mucuna puriens.

Kaug, (Nepalese). Foot and mouth disease.

Kanrai, (H कंडरी? *kandari*, a kind of mustard). An infectious disease exhibiting symptoms of Bosonto.

Kaushia-mearee, (H.) A grass in Oudh.

Kar. See Kur.

Kari-beon. A small tree (Bergera kœnigii ?)

Karkhana, (P. کارخانه). A shop, a work-house, a manufactory.

Keekur, (H. कीकर S. कण्टल *kantala*). Gum acacia.

Keermeya, (from S. कृमि *krimi*, worm). Wormy.

Keloo, (Panj. केलों *kelon*). A tree, Cedrus deodara.

Khabar, (Panj. खवी *khavi*) A grass.

Khall, (B. খাল from S. खात *kháta*, an excavation). A canal.

Khamun, A Panjabi grass.

Khang, (H. खाङ्ग, खा *khá* from S. *khad*, to eat and अङ्ग *anga*, body). Body eater. An insect supposed to be bred in the foot, and which is said to devour the whole body.

Khaprya. A cattle disease in Bombay.

Khar, (B. খড় S. खड् *khada*). Straw, stubble, thatching grass, also the Fuscous sugar grass.

Kharee-neemuk, (V. خاري نمك from S. क्षार *kshára*, alkali, saline earth and P. نمک *nemak*, salt). Impure salt.

Kharist, (P. خارش *kharish*). Itch ; sore.

Khas, (P. خاص particular, private, royal property). As a revenue term it is applied to the management of estates and the collection of its revenue by the officers of the government without any intermediate person between them and their cultivators, also to lands held by zemindars, and cultivated by themselves for their own benefit.

Khas-mehal, (Ar. خاص محل Khas as above and, محل *mahal*, district). Districts under the Government.

Khata, (U. خاطه from Ar. خط *khat*, a line, a character). An account book, a day-book, journal.

Khauss, (H. खस S. खट्टिका *khátiká*) Andropogon muricatum, the roots of which are made into screens for the hot season.

Khavara. Rinderpest.

Kheo, (Panj. खेव ? S. खगोड *khagoḍa*, a grass). (Saccharum spontaneum).

Kher. Vide Khar.

Khogra, (B. খাগড়া S. खगोडा *khagoda*, a grass). (Saccharum spontaneum).

Khol. (Vide khullee).

Kholie. (Vide khullee).

Khoon-ka-bimaree, (U. خون کے بیماری blood disease). Retention of urine, flatulency and constipation, supposed to be a disease of the blood.

Khoor, (S. खुर *khura*, hoof). Hoof disease.

Khoorah, (*Vd.* खुरा from S. खुर hoof). Foot and mouth disease.

Khoora-phutta. (Vide khur-phutta).

Khoorapira, (S. खुरपीड़ा *khurapidá*). Disease of the foot.

Khooree, (H. खुरी from S. खुर hoof). Hoof disease.

Khooree-fatee. (Vide Khur-phutta).

Khorie, (H. खोरी from S. खुर hoof). Hoof disease.

Khoorja, (S. खुरज *khuraja*, produced from the hoof). Foot disease.

Khoor-khoot, (from S. खुर hoof and खेट *khet*, to eat). A term for foot and mouth disease in Bombay.

Khoorock, (Panj. खुरक *khurak*, to itch or from S. खुर hoof). Hoof or foot disease.

Khoorpucca, (H. खुरपका from S. खुर *khura*, hoof and पक्व *pakwa*, ripe). Foot and mouth disease. Inflammation of the parts near the foot producing suppuration.

Khoorta, (from S. खुर *khura*, hoof). Hoof disease.

Khoorga, (S. खुरग *khuraga*, going on hoof). Foot disease.

Khooseta, (Panj. खुसेटा from S. खस *khas*, itch, scab). Foot and mouth disease.

Khoos, (S. कुश *kusa*). A grass, Poa cynosuroides.

Khoraha, (Nepalese from S. खोड *khoda*, lame). Hoof disease.

Khorala, (Vide kunjala).

Khora-neema. (Perhaps same as khor).

Khorent, (H. खोरेंट). Sore feet.

Khor-rog, (S. खोररोग, खोर *khora*, lame and रोग *roga*, disease). Foot and mouth disease.

Khor-wa, (H. खोरवा from S. खोर *khora*, lame). Hoof disease; foot and mouth disease.

Khosa, (B. খোসা from S. खस *khas*, to hurt). Husk pod, peel or rind.

Khuctha, (Bhot. खच्चा). Foot and mouth disease.

Khuggra. (Vide Khoggra).

Khullee, (B. খল্লী S. खलि). Oil cake.

Khungma, (from S. खञ्ज *khanja*, lame). Foot disease.

Khurah. (Vide Khoorah).

Khuratie, (H. खुरटी from S. खुर *khura*, hoof). Hoof disease.

Khurchun. (Vide Chunkhoor). Foot and mouth disease.

Khureef, (U. from Ar. خريف autumn). The autumnal harvest.

Khurent. (Vide Khorent).

Khuriah. (Vide Khoorah).

Khurphutta, (H. खुरफट्टा from S. खुर *khura*, hoof and स्फुट *sphut*, to split). Hoof disease.

Khur-walo, (from S. खुर *khura*, hoof). Foot and mouth disease.

Kill-khana, (P. كاه خانه *kelákhánah*). Place for forage.

Kismut, (Ar. قسمت *kismat*). Fate.

Kists, (Ar. قسط). Instalments.

Kodha, (H. कोधा B. কোদ S. कोद्रव *kodrava*). A small grain, Paspalum kora or frumentaceum.

Kodooah, (H. कोदुआ from S. कोद्रव *kodrava*). A milder form of eruption than gootee, so called from its resemblance to the grain of that name.

Kolie. (Vide Kalye).

Kolmee-sak. (Vide Culmee sak). Convolvulus repens.

Koloo. (Vide Kulloo).

Kolsies. (Anglicised plur. of B. কলসী from S. कलस *kalasa*). High or long necked water pitchers.

Komari, (from S. कुमारिका *kumárikú*, an insect). Epizootic aphtha.

Konda, (H. कोंढा S. कुष्माण्ड *kushmanda*). A gourd, Cucurbeta pepo.

Koodkay or Surdee, (from S. कुड *kud*, to solidify; to heap). A cold characterised by the accumulation and thickening of the nasal mucous (*a Madrasi term*).

Kookera or Manidh. A cattle disease.

Koond, (S. कुण्ड *kunda*, waterpot). Swelling of the belly or hoven.

Koora. A Panjabi grass.

Koorka, (H. कुर्का from S. करका *karaká*, braying). Inflammation of the throat and formation of tumours.

Koorug-Moorug, (Panj. corr. of S. खुररोग मुखरोग). Foot and mouth disease.

Kor-kotcha, (B. কড়কচিয়া). A plant. (Ardisia nivea).

Kos, (Corr. of S. क्रोश *krosa*). A measure of distance in India, varying from 1 to 2 miles.

Koy burto, (B. কৈবর্ত্ত S. कैवर्त्त *kaivarta*). A fisherman by caste or occupation, he is sometimes a domestic servant.

Kuchnar, (H. कचनार S. काञ्चनाल *kánchanála*). A plant. (Bauhinia variegata).

Kudinow, (from S. कुड *kud*, to confound with pain). A name of Rinderpest in Madras.

Kugree. (Vide Khogra).

Kulie. (Vide Kalye).

Kuliji-ka-dard, (U. درد کلیجی from H. कलेजा *kaleja*, liver, and P. درد *dard*, pain). Pain in the Liver.

Kullee. (Vide Khullee).

Kulloo, (H. कलु from S. कल्क *kalka*, oil cake or कल्ल *kalla*, to sound). A maker or vendor of oil by caste or occupation.

Kumhars, (S. कुम्भकार *kumbhakára*). Potters by caste and occupation.

Kumkhoor. (Vide Kunkhoor).

Kumgoor. (Vide Kunkhoor).

Kunch, (B. कुँच S. कुञ्चिका *kunchiká*). Seed of the Abrus precatorius, used as weight.

Kungwa. A term applied to foot and mouth disease in Sultanpoor.

Kunjala, (H. कुञ्जल S. कज् *kaj*, to be distressed). A disease in which ulcers break out on the foot.

Kunkar, (B. কাঁকর H. कांकर from S. कण *kana*, a piece). Gravel.

Kunker. (Vide Kunkar).

Kunkhoor, (Corr. of S. कण्टकखुर *kantakakhura*, thorny hoof). A term applied to foot disease in Sultanpore.

Kuniar, (H.) A wild grass.

Kunjee-bhat, (B. খোঁজিভাত). Rice gruel.

Kunro, (B. কুঁড়ো from S. कुट *kud*, to cut, to grind). The inner husk of rice.

Kurar, (Panj. करड S. करटः *karatah*). Saffron, (Carthamus tinctorius).

Kurbee, (H. करबि). A sort of grass, (Sorghum vulgare).

Kurnia. A cattle disease in which the animals lie on one side only, and characterized by disinclination to food.

Kurjunny, (S. कुञ्चिका *kunchiká*, Abrus precatorius).

Kurriah, (U. from P. کڑ *karah*, stiff limb). A kind of rheumatic complaint.

Kusa, (S. कुश) A sort of grass held sacred by the Hindus, (Poa Cynosuroides).

Kutbur, (H. कटवर). A plant. (Ficus bacciferus).

Kutcha-road, (from S. कचर *kachchara*, bad or कच्च *kachchha*, clayey land, unbaked). Unmetalled road.

Kutkanedar, (U. دار کتکنہ *katkená*, from S. कटकिन mountain or कठिन *kathina*, difficult and P. دار *dar*). An under-farmer or renter holding under the revenue payer or zemindar at a rack rent.

Kuth, (H. कथ S. खदिर *khadir*). Catechu.

Kyasts, (S. कायस्थ *kiyastha*). The writer caste.

Kyburto. (Vide Koyburto.)

L.

Lag, (H. लाग, a stroke). A term applied to foot and mouth disease in Bombay.

Laga-roga, (H. लागरोग, *lag*. q. v., and S. रोग *roga*, disease). A term applied to foot and mouth disease in Bombay.

Lagg. (Vide Lagg).

Lahirbath. Erroneously printed for zahirbath.

Lahory, (Assamese). Same as Leralemour.

Lahosa, (A. لاحوس *láhus*, unfortunate.) Rinderpest.

Lall, (H. लाल from S. लाला *saliva*). Mouth disease.

Laroo. (Panj. लढ *ladh*, toughness). Foot and mouth disease.

Lattee, (B. লাঠি H. लाठी). A stick, a staff, a club.

Lakshmí, (S. लक्ष्मी from लक्ष Contr. of लक्षण् *lakshman*, a mark). The wife of the Hindu deity Vishnu and goddess of prosperity.

Lepcha, (Nep. लप्च *i. e.* S. लप *lap*, [to speak] + च *cha*, vile) one of the most important tribes of the Nepal valley called also Sikkim from the name of the capital, they speak a language which is known under this designation of the tribe.

Lerale-mour. (Assamese). Dysenteric cholera.
Lila cholera, (S. नील *nila*, blue). Asiatic blue cholera.
Losur. A plant in Punjab.
Luka, (H. लुका). A worm which burrows under the skin of the back and perforates the hide in several places.

M.

Machans, (H. मचान, B. মাচাং from S. मञ्च *mancha*). A raised platform ; a scaffold in general.
Madar, (B. মাদার S. मन्दारमेद् *mahámeda*). A plant, Erythrina fulgens.
Mah, (Panj. मांह *mánh*, a grain). The Dolecos pilosus.
Mahajunne, (B. মহাজনী from S. महाजन *mahájana*). The profession of a Mahajun.
Mahajuns, (S. महाजन *mahájana*, a great man). The term is applied in most parts of India to a merchant, a dealer, a banker, also to a creditor.
Mahamari, (S. महामारि, महा *mahá* [great] + मारि *mári*, plague). Great pestilence. Rinderpest.
Maharoga, (S. महारोग, महा *mahá* + रोग *roga*, disease). Great malady. Rinderpest.
Mahdee. (Vide Mendhee).
Mahta. (Vide Matah).
Mahadeva, (S. महादेव, महा *mahá*, great and देव *deva*, God). A name of the Hindu deity Siva.
Mahasantopana, (S. महासान्तपन, महा *mahá*, great and सान्तपन, *sántapana*, a penance). A severe penance to be observed for fifteen days.
Mai, (H. माइ mother, the goddess Sitlah). Small-pox.
Maidan, (A. میدان). A plain, an open field or meadow.
Maind, (P. ماندہ *mandah*, to be fatigued, to be diseased). Rinderpest.
Maindh. A cattle disease.
Maindi. (Vide Mendhee).
Malpooahs, (B. মালপোয়া H. मालपुआ from S. मल्ल *malla*, excellent and पूप *púpa*, a cake). A kind of sweetmeat, a pancake.
Mamlutdars, (G. મામલાતદાર A. معمولاۃدار?) Head revenue or police officer.
Man, (Panj. मानी P. مان *mán*, disease). Rinderpest ; small-pox.
Man-moræ. (Vide Man-morhee).
Man-morhee, U. مان‌مونڈھہ *mánmondhá*, P. مان *mán*, disease and H. मोंढा *mondha*, shoulder. A cattle disease in which the neck becomes crooked.
Mannoo, (Panj. मन्ना *manno*, sickness, S. मन *man*, to be dull, P. مان *mán*, disease). Rinderpest.
Mannoon, (Panj). Vide Mannoo.
Mauskati, (مسک دانہ *mask dáneh ?*) An herb. Abelmoschus moschatus.
Mantuar, (Nepalese. Vide man). Bullocks that had the *mán* (Rinderpest).
Mantra, (S. मन्त्र from मन to think, to worship). 1. An Incantation, a mystical verse or syllable sacred to a deity, 2. A Vedic hymn or prayer.
Moora, (Assamese মৌড়া from B. মড়ক S. मरक *maraka*, a plague). Rinderpest.
Mardari, (U. مردارى from P. مردار *murdár*, a corpse). Skin of dead animals.
Maree, (B. মাড় S. मण्ड *manda*). Starch ; rice gruel.
Mars, (H. मांढा S. मण्डप *mandapa*). Temporary buildings, open sheds.
Mash-ka-roti, (H. माषकारोटी. माष का *másh-ká* of the grain and रोटी *roti*, cake, bread). A cake of beaten grain of the Phaseolus radiatus.
Matah, (S. माता mother, goddess Sitlah). Small-pox. Rinderpest.
Matha-rog, (H. माताराेग S. माता *mátá*, and रोग *roga*). Rinderpest, small-pox.
Matta. (Vide Matah).
Maunds. An earthen manger.
Mawar, (Assamese মউআড়). Rinderpest.
Medookee. Sores on the lip.
Mendhee, (H. मेंहदी *mehndi*, S. मेन्धी). A plant, Lawsonia inermis.
Meree, (H. मेडि from मेडियाना *mediyáná*, to skirt, मेंड *mend*, a bank). Enclosed with banks.
Mhani-byani, (from S. माहन *mahán*, great and व्यान *vyána*, one of the vital airs of the body). A disease resembling cholera.
Mirgee, (B. মৃগী from P. مرغی *merghi*, to be dull). Epilepsy.

Moat, (H. मोट). Vetches, lentils. Phaseolus aconitifolius.

Modul. A shrub.

Mogh, (Panj. मोघ a hole in the wall, a split). Purging.

Mohamai, (H. महामायी S. महामाया *mahámáyá*, great illusion, a name of the goddess Durga of which Sitala is a form). Small-pox. Rinderpest.

Mohara, (Panj. मोहर *mohar*, front, S. मुख *mukha*). Mouth disease.

Mohkur, (Panj. मुहखुरी *munhkhuri*, मुह *munh*, S. मुख *mukha*, mouth and खुरी *khuri*, S. खुर *khura*, hoof). Foot and month disease.

Mohooah, (H. महुआ from मधु *madhu*, honey). A tree, (Bassia latifolia).

Mohorrir, (Ar. محرر *muharrar*). A clerk, a writer.

Moi, Corr. of mai, q. v.

Moier, (Assamese মোৱেৰ S. मरक *maraka*, a plague). .Rinderpest.

Mokh, (Panj. मोख same as Mannoon).

Monii. Same as mannoon q. v.

Monkhee, (Panj. मोंखी from S. मुख *mukha*, mouth). Mouth disease.

Moochee, (B. মুচি, S. मुच *much* to hold fast). A worker in leather, but commonly applied to one who is by caste and occupation a shoe-maker.

Moongh, (H. मुंग S. मुद्ग *mudga*). A kind of pulse, (Phaseolus mungo).

Moonkhee. Vide Monkhee.

Moopameg, (Contr. and Corr. of H. मुह पांवमे घाव *munh-páwan-me-gháw*, ulcers on the mouth and foot). Mouth and foot disease.

Moopacca. (Same as muhpukka).

Moo-salwada, (U. مونہسولوداؤ from H. मुंह *munh* mouth, P. سول *sul*, the sole and A. وداؤ *wadaat*, destruction). Foot and mouth disease.

Moosla-boolki. A term used in Bombay for Diarrhœa, and cutaneous ulcers.

Moosunda, (H. मुंहमुंडा, मुंह *munh* mouth and मुंडा *Sundá*, a weevil or small insect in corn, mouth affected with worms). A term applied to Rinderpest in Bombay.

Morai, (H. from मरोडा *marodá* gripes, a flux). Diarrhœa.

Mooto, (B. মুতা S. मुस्त *musta*). Cyperus rotundis or communis.

Moreas, (Assamese মৰিয়া). A class of Agriculturists.

Mosail, (H. मसैल). Same as doob grass.

Mostazeo, (A. مستوعظ *mustwaáz*). A preacher.

Mosucks, (A. مسک *musak*). A leather bag for carrying water.

Mota-rog, (H. मोटारोग, S. मुट *mut*, to nourish, to be fat and रोग *roga*, disease; big disease). Rinderpest.

Moth, (H. मोठ). A grain, (Phaseolus aconitifolius).

Moukhee, (H. मौखि from S. मुख *mukha*, mouth). Mouth disease.

Mouzas, (Ar. موضع *mowza*, a place). A mouza is defined by authority to be a parcel or parcels of land having a separate name in the revenue record.

Mowa, (Assamese from Ar. موات *muwat*, death). Cholera morbus.

Mowah. Vide Mohooah.

Mowar, (Assamese. Same as Mawar).

Mowaso, (from H. मुह *munh*, mouth or A. موائے *mowasi*, malevolent adversary). Mouth disease.

Muhalla, (U. محلہ from A. محلة *mahallat*, a parish). A division of a town. A quarter.

Muh-posijah, (H. मुंहपसिजा from मुंह S. मुख *mukha*, mouth and H. पसिजना *pasijná*, to sweat). Diarrhœa with watering of the mouth.

Muj, (Panj. मज्झ *majjh* from S. मज्ज *majja*, to be immersed). A female buffalo.

Mukhuri, (Panj. मुखडी from मुखड़ा S. मुख *mukha*, mouth). Discharge from the mouth.

Mulvee-rog, (Contr. of S. मलवाही रोग *malaváhi-roga*, disease of the guts). A disease in which the throat and belly swells.

Mundul, (S. मण्डल *mandala*, a circle). The headman of a village who sometimes acts as the agent of the zemindar, letting the lands and receiving the rents of the villages.

Munik. A grass in Punjab.

Munter, (S. मन्त्र *mantra*). A mystical verse or incantation, spell, charm.

Murak, (S. मरक *maraka*). Plague; pestilence.

Murdah, (P. مردہ). Dead.
Murree, (H. मरी S. मरक *maraka*). Murrain.
Murruk. See Murak.
Mush, (S. माष *másha*). Seeds of the Phaseolus radiatus.
Muskulli, (S. माष कलाय). A vetch, Phaseolus radiatus.
Mutmoor, (H. मटर). A sort of pea, Pisum sativum.
Mutti-kalye, (H. मुटकलाइ). A pulse, (Fabaceæ Phaseolus aconitifolius).
Munhapakka. Vide Muhpucca.

N.

Naib, (P. نائب a deputy). A zemindar's agent for the collection of rents and general management of his estate.
Naksoorka, (Ar. نقخ سرخہ *nakhsurkhah*, نقخ *nakh*, piercing the head and سرخہ *surkhah*, the windpipe). A term used in the Central Provinces for a disease characterized by constant motion of the head, salivation and inflammation of the liver.
Naktana, (B. নাগটানা from S. নাগ *nága*, wind which escapes in belching, and B. টানা *táná*, pulling or straining). Stoppage of evacuations, resulting in distension of the belly.
Nal, (S. নল *nala*). A reed, Arundo karka.
Nar. Same as Nal.
Nar, (B. নাড়া S. নড *nad*, to fall off). Same as bosonto.
Nauds, (B. নাদনা S. নন্দা *nandá*). Earthen mangers.
Nebin-byani, (Marh). A cattle disease of a choleraic nature.
Neem, (B. নিম, S. নিম্ব *nimba*). A tree, Melia azadirachta.
Newabee, (Panj). Rinderpest.
Nim. See Neem.
Nowdooar, (Assamese নৱদুআৰ S. নবদ্বার *navadwára*, new gate or passage). One of the passes within the limits of Assam.
Nulcole, (H. नालकोल S. नालिक *nálika*, a buffalo). A bull.
Numdahs, (P. نمد *namd*). Thick woollen blankets or mats.
Nurudpeya, (Marh). A cattle disease probably Rinderpest.

O.

Odro, (Marh). Throat disease.
Ollo. Vide oolloo.
Omlah, (U. from Ar. عملہ *amlah*). The head native officer of a Judicial or Revenue Court under the European Judge or Collector, also native officers under native employ generally.
Oojar-Jahar, (P. وجعار زہر). Jatropha purgans.
Oolloo, (B. উলু S. उलुप or उलुक). A grass, Saccharum Cylindriacum.
Oomur, (H. उमर S. उडुम्बर *udumbara*). A tree, Ficus glomerata.
Oord, (H. उर्द). A pulse, Dolichos pilosus or Phaseolus Roxburghii.
Oorud. Vide Oord.
Oorudh. Vide Oord.

P.

Pacca, (H. पक्का S. पक्व *pakva*, matured on the eve of rottenness). Foot and mouth disease.
Pachao, (H. पचाव S. पच *pach*, to suppurate or पय *páy*, to putrefy). Putrefaction ; mortification.
Paie, (H. and Marh. पेयी *peyi*, a small basket). Hydatid cyst in the Liver.
Paie-lagg or Paie-laig, (H. पेयीलाग). Vide Paie and Lag.
Paira, (Panj. पैडा *paida*, S. पद *pada*, H. पैर foot). Foot and mouth disease.
Pait-chulna, (H. पेटचलना *Pet*, belly and *chulna*, to move). Diarrhœa.
Pakdar, (B). A disease of the lungs in animals.
Pakni-ki-bimaree. Vide Poknal-ki-bimari.
Palchi, (Panj. पलचि from पलमेटा *palsetá*, to turn from side to side). A cattle disease.
Palia, (H. पेलिया from पलना to stuff, to squeeze out). Inflammation of the throat attended with cough and watering of the eyes and mouth.

Palwan, (Panj. पलवन). Andropogon annulatus, a grass abundant in Punjab.

Pan, (B. পান H. पान S. पर्ण *parna*). Piper betle.

Panchunee, (Assamese পাচনী a scourge). Cholera.

Panjasota, (*kole*, hill lang). A virulent form of Sitlah. Rinderpest.

Panpriah, (H. पापड़िया, पापड़्वेलना *papaḍbelná* [*pápaḍ*], a thin corisp cake of grain and *belná*, to laminate] to undergo great labor or pain). A cattle disease in the Central Provinces.

Paoner, (H). A breed of cattle in Oudh.

Papedah. Vide Pupday.

Papesaka-murza, (U. پیپس کا مرض S. पुप्फुस *pupphus*, the lungs, and P. مرض *murz*, disease). Disease of the lungs and wind-pipe.

Pariar, (H. पारियार from S. पार *pára*, opposite bank of a river). A breed of cattle on the opposite side of a river.

Pashanghee, (B. পাশাঙ্গী S. पार्श्व *parsva*, side and অঙ্গ *anga*, limb). A disease in which the cattle lie on one side or it may be the same with *Posanga*.

Patakna, (H. पटकाना knocking down.) A disease among cattle causing great prostration.

Pathars, (H. पाथार from पाथ *pátha*, a measure of grain in Kumaon). A measure of land equal to 240 sq : ft. in which a *patha* or 2 seers of seed may be sown.

Patti, (H. पट्टी). A quarter or portion of a Parish.

Pawn. Vide Pan.

Pedda-moosa-rogum, Tel. *pedda*, great S. मसूरिका *masúriká*, Small-pox, and रोग *roga*, disease). Small-pox. Rinderpest.

Pedda-moosera-rogum. (Vide Pedda moosa rogum).

Peelia, (H. पीलई *pilai*, from S. প্লীহা *plihá*). Spleen.

Peepula, (H. पीपल S. पिप्पली *pippali*). (1) Piper longum, (2) Ficus religiosa, S. पिप्पल *pippala*.

Peer, (Panj. पीड S. पीडा *píḍá*, disease). Rinderpest.

Perangah, (Assamese পীড়াঙ্গ S. पीडा disease and অঙ্গ body). Rinderpest.

Pergunnah, (P. پرگنہ). A district or province or tract of country comprising many villages.

Perriahnovoo. Rinderpest.

Perwannah, (P. پروانہ). An order or written precept or command. A letter from a man of power to a dependant.

Peshkar, (P. پیشکار). An agent, a manager in general: in Bengal one of the ministerial officers in the Courts.

Pet-aphra-jatahai, (H. पेट अफराइ जाताहै *pet*, belly, *aphrai*, swelled out, *játáhai*, becomes). Hoven, swelling of the belly.

Petara, (H. पेटारा S. पिटक *pitaka*). A clothes basket.

Pet-bhagee, misprint for Pet-bhangi (H. पेटभंगि, पेट *pet*, belly and *bhangi*, from S. भङ्ग *bhanga*, split). Dysenteric diarrhœa accompanied with swelling and ulceration of the lips.

Peya, (H. पेया from पियास *píyás*, thirst, S. पा *pá*, to drink). A disease in which the affected cattle have excessive thirst.

Pharki, (Panj. फडकी, writhing). A painful cattle disease.

Phattya, (Ud. फट्टिया from S. स्फुट *sphut*, to split). Foot and mouth disease in which the foot is split.

Phatua, (H. फुटिया a sore *phutiyá*, from S. स्फुट *sphut*, to split). Foot disease.

Phausee. A cattle disease in Bombay.

Pheepree, (Panj. फिफ्फरा from फिफ्फरा S. फुप्फुस *phupphusa*, the lungs). Pleuro-pneumonia.

Phoopsea, (B. ফোপ্সা H. फुफसिया from S. फुप्फुस the lungs *phupphusa*, or P. فوف *fuf*, the oxe's bladder). Disease of the lungs.

Phopsa. See Phoopsea.

Phopsha. See Phoopsea.

Phorya, (B. ফোড়া S. स्फोट *sphota*, boil). Small-pox.

Phurtree, (Contr. and Corr. of S. फुरत *sphurat*, swelling and तोरण *torana*, throat).

Pichkari, (B. পীচকারি H. पीचकारी S. प्रक्षेपणी *prakshepani*). Enema pipe, syringe.

Pillae, (H. पिलई Pilai S. प्लीहा *plihá*). Spleen.

Pirtupee, (Panj. Contr. of पिड़का *piḍkí*, a disorder attended with small boils and तपाली *tapálí*, an endemic fever). A cattle disease in Punjab.

Pita. Same as Peya.

Pittars, (Assamese পীতৰ S. पिटक् *pitaka*, a granary). Rice fields.

Pode, (B. পোদ S. पद्मराज *padmaraja*). A low caste of Hindus.

Poka. A disease among cattle in which the skin becomes scurvy and the hairs fall off. Salivation and purging.

Pokna, (H. *ponkná*, to be fluxed). Purging.

Poknah. Vide Pokna.

Pokna-ki-bimari, (U. پونکناکی بیماری H. पोंकना Pokna q. v. and P. بیماری *bimari*, disease). Diarrhœa

Poknee, Vide Pokna.

Poojah, (S. पूजा). Worship.

Pookta for Pootka, (H. पुटका from पुट *put*, a flux, to purge). Diarrhœa.

Pookunwa. Vide Pokna.

Poor, (H. पुड़ी *puḍi*, from S. पुड् *puḍ*, to cover). A skin with which a drum is made; a well bucket.

Poorah, (Assamese পূৰা). A measure of land, the same as bigha.

Popsha. Vide Phopsha.

Posanga, (H. पोसाङ्ग S. पूत *pút*, to stink and H. सुंघना *sunghná*, to smell). A disease, the symptoms of which are similar to those of khoorah, and in which bloody stools emit a stinking smell.

Poteet, (H. पतित fallen). Fallow; a waste land.

Poyah, (H. पया, S. पयोधर *payodhara*). A fragrant grass, (Cyperus rotundus).

Puchima. Vide Puschima.

Pukka. Vide Pacca.

Pumgina, (Panj. पंगिना from पंग *pang*, a small worm). A sort of cattle disease in Hissarpore produced by worms.

Pupday, (from S. पुष्फुस *pupphusa*, the langs.) A term used in Madras for disease of the lungs in Camels.

Pura, (H. पुरा S. पुरश्चद् *puraschada*). A grass (Saccharum cylindricum).

Purdah, (P. پردہ). A screen; a curtain.

Purwa, (from S. पुर *pura*). A small village, a sub-division or dependency of a village

Puschima, (B. পশ্চিমা from S. पश्चिम *paschima*, west). Hoven.

Puschima-Nara, (B. পশ্চিমা নাড়া literally Bosonto of the west). Same as Puschima.

Pussari, (B. পসারি). A grocer, a druggist, a chandler.

Putawar, (H.) A grass which grows in Oudh.

Putkee, (H. पटकाना *patkáná*, knocking down). A disease which causes great prostration. Rinderpest.

Putteedar, (U. پٹّے دار from H. पट्टी *putti*, q. v. P. دار *dar*). Proprietor of a large section of land in an estate; the holder of a share in a coparcenary village or estate.

Putwaree, (H. पटवारी or पटवार from S. पट्ट *patta*, a document). A village accountant whose duty is to keep accounts relating to lands, produce, cultivation, changes or past assessments of a village.

Pyker, (P. پیکار). A dealer, shop-keeper, an intermediate dealer or agent, a broker, also a hawker, a pedlar.

Pytchinow. A term used in Madras for Rinderpest.

R.

Raggy. A Madrasi term for Sugar-cane.

Rakhasas, (Anglicised plu. of S. राक्षस *rákshasa*, or रक्षस *rák·has*, from रक्ष to preserve [Kuverás treasure]. Evil spirits of various classes, demons, giants.

Ral, (H. राल *rala*, resin). Saliva.

Raze, (A. رازح *rázih*, decaying). A cattle plague in Oudh.

Rhisis, (Anglicised plu. of S. ऋषि from ऋष *rish*, to go; who goes beyond earth by wisdom). Saints, sanctified sages.

Riddhi, (S. ऋद्धि from ऋध् *ridh*, to grow). (1) Prosperity (2) A medicinal plant.

Rog. (S. रोग *roga*). Rinderpest.

Rogh. (Vide Rog).

Rohinee, (S. रोहिणी). Chebulic myrobalan.

Rohini, (S. रोहिणी, रूह *ruh*, to grow from a cow.

Rokti. Foot and mouth disease.

Roomdo, (Ar. رمو *ramd*, destruction). A term used in Bombay for a fatal disease characterized by diarrhœa and salivation.

Roomro. A Bombay term for a disease of the chest among cattle causing labored breathing.

Rorah, (H. रोडा boil; S. रुट *rut*, to suffer pain). Foot and mouth disease.

Rorey, (H. रोडो). Same as Bedun q. v.

Rorh. Vide Rorah.

Roti, (H. रोटी from S. रुट् *rut*, to knead). Bread.

Rubee, (U. ربے from A. ربيع *rabiá*, the spring). The spring havest.

Rubbee. Vide Rubee.

Rudra, (S. रुद्र). A name or form of the Hindu deity Siva.

Rukhs, (Panj. रक्ख). Grazing grounds.

Rungwa, (H). An infectious disease.

Rurpooria. (Panj.) A shrub.

Rusha-anthee, (H. रसा आंतो, रसा *rasá*, to wet and आंत *ánt*, S. आन्त्र *antra*, entrails). Rheumatic affections with diarrhœa.

Russee, (H. रस्सि). A lineal measure equal to eighty cubits.

Rut, (S. रथ *ratha*). A kind of carriage, a covered carriage.

Ruth. Vide Rut.

S.

Saars, (H. सांड S. षण्ड, *shanda*). Bulls.

Sahosa. (Misprint for Lahosa, which see).

Sain, (Panj.) A Grass.

Sajna, (B. শজ্না S. शोभाञ्जन *sobhánjana*). A tree, Hyperanthera morunga.

Salbad, (U. from P. سالبیہ *salbyah*). An herb, the sage.

Sali. Vide Solie.

Sallwa, (Panj. सल्लवा from सल्लवाद् *salwái*, perforation). A cattle disease in Punjab.

Saraku, (from H. सडा *saḍá* ? rotten). A local term for Rinderpest in Madras.

Sasoon, (Corr. of S. श्मशान *smasána*). A place where dead bodies are thrown or burnt.

Sawmha, (from A. سمو *samaá*, rising high). A term for swelled throat in the Central Provinces.

Sedh, (H. सेद् *send* Bryonia Scabrella the berries of which, resemble the pustules on the diseased cattle). Foot and mouth disease.

Seemuk, (from P. سموم *samoom*, a sultry wind). Asphyxia caused by the inhalation of poisonous wind.

Seeor, (Contr. of سیوجوال from A. سيوع *suyuá* flowing and H. राल *rál*, saliva). A cattle disease attended with diarrhœa and watering from the nose and mouth.

Seer, (S. शिर *sira*, the head). Another name for the disease Rorah.

Seerh, (from S. शिर the head). A term used in Bombay for a disease of the head.

Semohia-matah. A disease in which besides the ordinary symptoms of matah, there is swelling of the glands of the throat and neck.

Serai, (P. سراي). An inn, a rest house.

Serpan, (H. सरपन from S. सर्पण *sarpana*, creeping. A cattle disease in Bombay in which the animal assumes a dark color and becomes prostrated.

Shakm, (Panj. P. شکم belly). An alvine affection.

Shama, (B. শ্যাম S. श्यामधास). Two kinds of grass, Panicum frumentaceum and colonum.

Sheekun, (Panj. सिकणा [from P. شکن breaking] to be parched). A cattle disease in Umballa.

Sheeshum, (H. सीसों, S. शिंशपा *sinsapá*). A tree, Dalbergia sisoo.

Shikaree, (P. شکاري). A huntsman.

Shitolah. Vide Sitla.

Sicabda, (S. शकाब्द *sakábda*). Any year of the area of Sáliváhana.

Silt, (from A. سلطات *saltat*, sharp in the hoof). A local term for Rinderpest in Bombay.

Simla, (B. শীমলা or U. from A. سملع *samalla*, a wolf). Same as Puschima.

Simoolkhar, (U. شملخار from Ar. شمال *shamál*, north and S. क्षार *kshára*, an alkali). White arsenic.

Simulgach, (B. শিমুলগাছ S. শাল্মলী *salmali*). The silk cotton tree, Bombax heptaphylla.

Singabon. (Hill dialect). A cattle disease.. Some affection of the horn.

Singhai, (from S. शृङ्ग *sringa*, a horn.) A breed of cattle.

Singhara-nut, (H. सिंघाड़ा from S. कृङ्गाट *sringáta*). An aquatic plant (Trapa bispinosa).

Sirish, (B. শিরীশ). A tree (Fabaceæ, Acacia sirissa).

Sirreek, (Panj. सडक *saḍak*, severe aching of the bones or from सडन *saḍan*, to rot). Rinderpest, one of its symptoms being stinking of the mouth.

Sissoo. Vide Sheesum.

Sitala. Vide Sitla.

Sitla, (S. शीतला goddess of small-pox). Small-pox.

Sivi, (from S. शिवि a beast of prey). Small insects.

Smritis, (Anglicised plu. of S. स्मृति [from स्मृ *smri* to recollect] tradition). The Laws delivered by the Hindu inspired writers such as *Manu*, Parásara &c. from their recollection of the texts of the *Vedas* or laws so delivered committed by their pupils into writing from memory.

Sobaker. Vide Sobokar.

Soboker, (Assamese). Foot and mouth disease.

Sobokar-binear. Same as khoora.

Sohagpoor. A name given to a cattle disease from a place of that name in the Central Provinces.

Sohagpooria. Appertaining to Sohagpoor.

Solee, (S. शाल्ल *sáli*). Rice in general; hence rice growing land in Bengal.

Sombol-khar. Vide simool-khar.

Sondhaor-miaree. A grass in Oudh.

Soojee, (B. সুজি H. सुजि from S. सुचित *suchita*, cleansed). The flour ground from the heart of the wheat.

Sookan-bakooliar, (Assamese). Swollen throat.

Soorka, (P. گلو ?) See Naksooka. Pleuro pneumonia.

Sooroo, (Panj). A plant from which an intoxicating liquor is made.

Soudagar, (U. سوداگر from P. سودا *sowda*, trade). A merchant, trader.

Suah, (U. سوا from P. سواد *suad*). A distemper supposed to arise from drinking salt water.

Subedar-ka-poorwa, (U. صوبہ دارکاپوروا). The poorwa (q. v.) of the Subadar.

Suffa, (A. صفا *safá*). Purity. Faultlessness.

Suji. Vide Soojee.

Sumbh. A grass which grows in Punjab.

Summaroo, (P. سم‌ماڑ diseased hoof سم *sum*, hoof and ماڑ *már*, diseased). Foot and mouth disease.

Sunda, (S. षण्ड). A bull, (buffalo ?)

Sunkea, (B. সেঁকো A Corr. of S. अस्मक *asmaka*). White arsenic.

Sunko. Vide Sunkea.

Sur, (from P. سور redundant). A protuberance on the side of an animal.

Surya, (S. सूर्य्य from सृ *sri*, to move [in the heavens]). The sun.

Surdhee, (P. سردي *sardi*, cold). Catarrh.

Sursow, (H. from सरसों S. सर्षप *sarshapa*). A sort of mustard (Sinapis dichotoma).

Surwalla, (S. सर sara). A sort of reed or grass, Saccharum Sara.

Surwara, (S. सर sara). Vide Supra.

Sutari, (H. सुतारी). An awl.

Suth, (Panj. सठ from सठना *sathná*, to cause to adhere). Quarter ill or black quarter.

Suttoo, (H. सत्तु S. सक्तु *saktu*). Barley meal. Meal of several sorts of pulse.

Suvadra, (S. सुभद्रा *subhadrá*). A creeping plant, (Echites frutescens). The sister of the Hindu deity *Jagannátha*.

Syul (Panj. सयालु *seyálu* relating to the winter). Small-pox. Rinderpest.

T.

Taelee. See Tilli.

Takun, (H. टखना? *takhná*, the ankle joint). A cattle disease, perhaps foot disease.

Talee, (H. तेलि, B. তেলি, from S. तैलिक). An oilman, a caste whose occupation is selling oil.

Tandi, (H. ठण्डी *thandi*). Cold.

Tari, (B. তাড়ি S. तारिक). Toddy. Palm juice.

Tapta-Krichchhra, (S. तप्तकृच्छ्र, तप्त *tapta*, [heated] कृच्छ्र *krichchhra*, penance). A penance in which hot liquids are drunk and hot air is inhaled.

Tavelams, (Singhalese). Cowsheds, cowpens.

Taza, (P. تازہ *tazah*). Fresh.

Tehsildar, (U. تحصیلدار from P. تحصیل *tahsil*, collection). A native collector of revenue, rent collector under a zemindar.

Tewars, (B. তিয়র S. तीवर *tivara*, a fisherman). A class of fishermen.

Thakrooni, (B. ঠাকুরাণী, a goddess from S. ठक्कुर *thakkura*, a deity). Rinderpest.

Thaloreenovw, (Tam). Quarter ill or black quarter.

Thannah, (H. थाना, B. থানা from S. स्थान *sthána*, a place). A station, a guard, a police station.

Theekadar, (U. ٹیکادار from H. टिका S. तिलक *tiláka*, a mark, a spot and P. دار *dar*). An inoculator.

Thega. A term for foot and mouth disease in Madras.

Thokeo. A term applied to a system of poisoning cattle.

Thudee. Corr. of Thundi. Cold.

Thukam, A term for Rinderpest in Madras.

Thundee, (H. ठण्डी). Cold.

Thurdeyee. Vide Thundee.

Tigra, (H. तिगड़ि). A grass (Boerhavia diffusa).

Tika, (H. ठिका *thica*, from S. ठिक *tik*, to bind). A lease, a farm of revenue, hire, fare.

Til, (S. तिल *tila*). Sesamum orientale.

Tilli, (H. तिल्लि). Spleen.

Tirthas, (*Anglicised plu. of* S. तीर्थ from ड *tri*, to pass over [difficulties] or extricate [from sin]). Holy places, places of pilgrimage.

Tondinow, from H. टुंड *tund*, the throat. A term for malignant sore throat used in Madras.

Toolsi, (S. तुलसी). A plant, Ocymum Sanctum.

Toordale, (H. तुडादाल, तुडा from S. तुड *tud*, to break, and दाल *dala* pulse). Broken pulse.

Tulligana, (H). Worms in the stomach.

Tupca, (H. तपका palpitation from S. तप् *tap*, to bear pain). A disease in which the animal staggers.

Turuckphasee, (A. ترک فاس *tarkfuas*, leaving off eating). A cattle disease.

Tutifula, (B. টুটি *tunti*, throat and S. फुल्ल *fulla*, to swell). Swelling of the throat.

U.

Ujmoda, (S. अजमोदा). A term applied to three plants; Ligusticum ajwaen, Carum carwi and Apium involucratum.

Ukrao, (H. अकड़वाई *akadvái*, cramps). Foot and mouth disease in which the feet and face swell and the stomach distends.

Ummai, (H. उमाइ from S. उमा *umá* a name of the goddess Durgá). Small-pox, Rinderpest.

Ummay, (Vide Ummai.)

Unchalio (Corr. of H. आंतचलावा *ánt chalává*, आंत S. अन्त्र *antra*, intestine and चलावा [from S. चल *chal*,] motion). Diarrhœa.

Uphara. Vide q. v. Aphara.

Uri or Ooree, (B. উড়ী or উড়ীধান S. ओडी *o-di*). A kind of wild rice.

Urhar-dol, (H. अरहरदाल from S. आढकी *ádhaki*). Split pulse of the Cystis cajan.

Urudh. Vide Oorudh.

Uttraha, (Corr. of S. उत्तराहि *uttaráhi*, from the north). A breed of cattle in the Patna division, which are of a large size and give plenty milk.

V.

Vaba, (A. وبا *wabá*). Plague, Rinderpest.

Vah, (Panj. वाह potency; S. वह *vah*, to flow). Rinderpest.

Vair, (S. वैर *vaira*, an enemy). Rinderpest.

Vasuri, (from S. वस *vasa*, a cow and अरि *ari*, enemy). A local term for Rinderpest in Madras.

Vasudeba, (वसुदेव from वसु *vasu*, a deity, the incarnation of one of the *Vasus* and दिव *div*, to shine). Father of Krishna.

Vedun, (S. वेदन *vedana*, pain; same as Bedun). Rinderpest.

Vekkai. A local term for Rinderpest in Madras.

Varne gardan, (Panj. वाढना गर्दन, *vádhna*, swelling and P. گردن *gardan*, neck). Swelling of the neck.

Vimana, (S. विमान from वि *vi*, before and मा *má*, to measure). An aerial self-moving car of the Hindu gods.

Viswarupa, (S. विश्वरूप, [विश्व *viswa*, all and रूप *rupa*, form] assuming or existing in all forms. A name of the Hindu deity Vishnu.

W.

Wagha, (A. واقع *wakh*, stiff hoof). Rinderpest without cutaneous eruption.

Wah, (Panj. from S. वह *vah*, to flow). Purging.

Wangor, (H. वङ्गर from ونگ *wang*, ugly). A peculiar breed of cattle in Oudh.

Wara, (from A. وري *wari?* pus). Foot and mouth disease.

Waryacha-rog. (Same as mota-rog). Rinderpest. Great disease.

Woolloo. Vide Ollo.

Wooltarie. A peculiar breed of cattle in Oudh.

Y.

Yor, (Thibetan ཡར, *yara*, up and down, cholera). Rinderpest.

Z.

Zahmat, (A. زحمت fetid). A cattle disease in Punjab.

Zaildar, (U. زیلدار, Ar. زیل *zail*, an appendix, the lower margin of a zemindari grant in which the names of the lands granted are recapitulated: any supplementary details). Having a zail.

Zamindar, (U. زمیندار, *zamin*, land and دار *dar*, one who has the charge of or is the holder of) Landlord, landholder in Bengal, the term is also applied to the owner of estates who pays revenue direct to Government.

Zardozi. (Vide kulu jika dard).

Zemindar. (Vide Zamindar).

Zemindaree, (P. زمیندارې). The office and rights of a zemindar. The tracts of land constituting the possession of a zemindar.

ABBREVIATIONS.

A. or Ar. Arabic.
Assam. Assamese.
B. or Beng. Bengali.
Bhot. Bhotanese.
Canar. Canarese.
G. or Guz. Guzrathi.
H. or Hind. Hindi.
Karn. Karnatic.
Lep. Lepcha.
Mar. Marhatti.
Nep. Nepalese.
Panj. Panjabi.
P. or Pers. Persian.
S. or Sans. Sanscrit.
T. or Tel. Telegue.
Tam. Tamil.
Thib. Thibetan.
Ud. Udia, or Uria.
Ur. Urdu.

INDEX.

Pages.

A.

Aberdeen, Andaman Islands—Proceedings of Committee in ... ... 599—601,—602
Abdool Gunny, meat agent, Benares, evidence of ... 349
Act to regulate the sale of poisons, Bombay, reports on 738
contagious cattle diseases in Madras ... 764
Adumpore, information regarding cattle poisoning obtained at 723
Advances made for hides 228, 653
Agents for poisoning cattle 648
Agnew, Colonel W., on cattle disease in Assam ... 279
Agra, district of 402
division 397
historical sketch of cattle plagues in... 399
index of records 397
Tehseel, murrain in 402
Agreement between chamars and villagers to stop cattle poisoning 724
Agriculture, description of, in Humeerpore ... 382
effects on 89, 117, 402
in Sindooree 114
Debroogurh 319
Ahmedabad, cattle diseases of 562
Ahmednugger, history of cattle disease in ... 571
Aishoo, foot and mouth disease, in Hooghly ... 165
Ajnalla, a Tehseel in Umritsur, cattle disease in ... 467
Akbar Mullah, evidence of 189
Akna, village in Hooghly, visit to 164
Alchara, a cattle disease 115
Allahabad cattle disease, statement regarding, 375—377
district of 391
division 369
historical sketch of cattle plagues 373
index to records 369
tabular statement regarding murrain in 395
Alliga, evidence of 322
Allyghur, district of, *moopuccah* in 413
Ally Hossein, evidence of 351
Alukdiah, Brahminee bulls in 117
cattle breeding in 117
trade of 116
Amoor, evidence recorded at 187
Analysis of poison by Baboo Kanye Lall Dey ... 666
F. N. Macnamara, Esq., M.D. 665
W. Walker, Esq., M.D. ... 726
Andaman Islands, historical sketch of cattle plagues in 595
Andar-ka-matah in Koka 478
Apri and *badee*, identity of 555
definition of 555
Argun Bakooli, evidence of... 75
Arjmand, evidence of 497
Aroonea, cattle poisoning in 528
chupka in 528
murrain in 528
source of 528
stock of 528
visit to 528
Arsenic, annual importation of 705
dealers of, in Patna 689
sale of 689
trade in 688
uses of 689
used as poison 659
whence obtained 688

Pages.

Asab Tappa, evidence of 258
Asayest, a cow doctor, evidence of 479
Ashburner, Esq., L. R., report by 561
Assam cattle diseases, introduction of 304
report on 279
historical sketch of cattle disease in ... 267
index of records 263
Light Infantry, statistics of cattle disease ... 630
pasturage in 303
proceedings of the Commission in ... 5
statistics of cattle disease 628
Assan Mundul, evidence of 101
Avroe, symptoms of 559
Azimgurh, cattle poisoning cases, abstract of ... 703
in 685
chechuck in 367
district of 367

B.

Bagaty, village of, visited 169
Bagdangah, cattle diseases of 171
near Chandernugger, visit to ... 170
Baharalla, cases of rinderpest seen at 496
cattle diseases of 496
information obtained at 496
Bolaram Day's Street, evidence recorded at ... 74
Baloregunge, hides of 165
source of disease in 165
Bam, rinderpest at 181
visit to 181
Bama Churn Dutt, evidence of 188
Bancoorah, statement of mortality from cattle diseases 191
Banda, cattle diseases in 388
cattle disease, statement regarding ... 375
Bankipoorah, evidence recorded at 401
rinderpest in 401
visit to 401
Banyram, evidence of 187
Baragow Tatee, foot and mouth disease in ... 387
gowthon sitlah in 387
starvation of cattle in ... 387
visit to 387
Bar, mortality in 472
Baraitch, district of 516
information regarding cattle plagues in ... 516
statistics of cattle plagues in 516
Baraset, statistics of cattle disease 622
sub-division, case of cattle poisoning ... 660
Bareilly District, cattle murrain in 425
segregation in 425
mortality in, from murrain 426
Barnard, Esq., A. C., report by 388
Baripore sub-division, case of cattle poisoning ... 661
Burooah, Nobinchunder, Baboo, evidence of ... 318
Barrow, Esq., (v. s.) C., on rinderpest, Benares ... 360
Barton, Esq., E. J., comments on Mr. Farrell's report on cattle poisoning... ... 657
letter from 63
Basbelooria, rinderpest in 247
visit to 247
Bashdebpoor, disease in 170
visited 170
Batan, symptoms of 147
treatment of 147

	Pages.
Batan in Bograh	248
and small-pox, identity of	559
symptoms of	559
Beadh in Hazareebaugh, outbreak of	201
Becher, Esq., S. J., letter of, to H. W. Dashwood, Esq.	696
Beddy, Esq., J. F., report on cattle plagues in Narsingpur	589
Belgachee diseases, history of	109
Beercoonda, cases in	245
cattle housing in	245
losses in	245
outbreak in	245
visit to	245
Belgaum, cattle diseases of	574
statistics of cattle diseases in ...	575
Belooria, in Moorshedabad, cases seen at ...	246
cattle poisoning in	246
evidence recorded at	246
history of cattle plagues in	219
post-mortem examination in	220
rinderpest in	246
visit to	246
in Shahabad	218
Benaitah, information obtained at	219
Bengal, Behar, and Orissa, index to cattle poisoning...	639
buffaloes importing cattle disease in Assam 283,	304
Benares, breeding of cattle	366
cattle disease and poisoning, by A. J. Lawrence, Esq., c. s.	364
cattle diseases, statement showing localities affected	358
cattle plagues, nature of	352
cattle poisoning in	351
committee's report of	352
division	339
historical sketch of cattle plagues...	343
index of records	339
poisoning of cattle in... ...	685
evidence recorded at	366
foot and mouth disease in	366
hides, disposal of	366
cases seen at	366
outbreak, correspondence on	350
prevalence of *matah* in	366
rinderpest in	347
small-pox in cattle near	352
Beparies in Tatee	387
Bepotea Chamar, evidence of	391
Bernard, Esq., C. E., report concerning Nagpoor ...	585
Bhaboo Khan, evidence of	85
Brahminee bulls of Alukdiah	117
Bhaugulpore, cases of cattle poisoning in ...	679
district of	231
division, cattle poisoning in ...	678
historical sketch of cattle plagues	225
index of records ...	223
names of cattle diseases in ...	225
division, sanitary measures in ...	755
Bhawanee, former attack in Soobedarpore ...	389
history of, at	381
infectiousness of	381
in Moniejar	383
Narrainpoor	390
Soobepore	389
mortality from ... 381,	389
origin of, in Moniejar	383
Soobedarpore	389
prevalence of, in Humeerpore ...	381
second attack of	381
source of	381
in Rameree	382
spread of, in Humeerpore ...	383
Bheershenee, villagers of, evidence of	183
visit to	182
Bhogoban Ghose, evidence of	170
Bholanauth Ghose, evidence of	171
Bhooknee and *matah* contrasted	480
and *peer* contrasted	477
contagiousness of	498
Bhooknee in Kamokee	476
remarks on	xvi
remedy for	492
symptoms of	492
time of	492
treatment of, in Jhung	498
Bhoyrub Mistree, evidence of	86
Bignold, Esq., E. T., letter from	248
Bijnour, cattle diseases in	422
district of	421
evidence recorded at	524
foot and mouth disease in	524
murrain in	524
segregation practised in	421
visit to	524
Bilooa, cause of	456
Birch, F. M., Major, letter from	467
Birki and *mirgee*, identity of	555
cause of	555
mortality from	555
Bisnath Moochee, examination of	98
Black-quarter 118,	455
Blacquire, Mr., evidence of...	43
Blathwayt, Lieut. L., letter of	278
tabular statement of cattle disease in Golaghat, by	281
Blechynden, Esq., A. H., opinion regarding sanitary measures	760
Blyth, Esq., W. G., letter from ...	489
Boddam, H. L., Lieut. Colonel, letter from ...	200
Bograh, *bussunto* in	248
district of	248
Boolundshuhur, district of	409
summary of returns of cattle plague	410
Bombay Act VIII of 1866, reports regarding the working of	738
historical sketch of cattle diseases in ...	519
index of records	547
information regarding cattle plagues in ...	558
Presidency	547
Bood-Bood, cases tried in cattle poisoning ...	665
evidence of villagers of	184
origin of murrain in	182
outbreaks at	182
rinderpest at 181,	184
visit to	184
Boorhana, disease in	414
Borick, evidence of	327
Borradaile, Esq., A. A., report of	562
Borwa, Gonaviram, Esq., statement of	261
Bose's, Kalinath, judgment in a case of cattle poisoning	663
Bowie's, Capt., report on cattle diseases in Sambalpore	590
Boycanthpoor, village of, visited	169
Breeding of cattle ... 79, 477, 328,	127
in Alukdiah	117
Assam	126
Khoolnah	285
Assam, improvement of ...	305
Benares	366
Durrung	270
Jhung	491
Lahowl	325
Madarkhat	327
Narainpore	287
Paharpoor	525
Sianugger	402
Shajehanpoor	422
Breeds of cattle, Assam	316
improvement of	viii
of cattle in Kheeree	512
Breeding, report on	viii
Broach, cattle diseases of	560
information regarding cattle plague in ...	560
Brodhurst, Esq., M., on Benares cattle disease ...	355
Brojokissore Ghose, evidence of	84
Brown, H. U., Lord, letter of	146
Bruce, Esq., C. P., report of...	272
Budaon, diseases of	430
district of	430

	Pages.
Budda azar, history of	541
Buffaloes, importation of, in Assam	284, 333
Seebsaugor ...	335
liability to attack	451
Bulia, history of	563
Bulls (Arias) of Lokenathpore	117
Bulsar, information regarding cattle diseases in ...	560
Bunni, evidence recorded at	526
Bunthra, evidence recorded at	527
foot and mouth disease in	527
murrain in	527
source of disease in	527
Burbooroah, evidence recorded at	312
Burdwan division	153
cattle poisoning in	664
historical sketch of cattle plagues in	159
index of records	153
sanitary measures in ...	752
villagers of	176
Burmah and the Straits, historical sketch of cattle disease in	591
Burra azar, history of	539
nature of	539
symptoms of	539
treatment of	539
Burradook, symptoms of	414
treatment of	414
Burree in Hurdui	509
symptom of	510
Bussunto in Chittagong	151
Lokenathpore	117
Maunbhoom	198
mortality from	113
remedies for	151
season of 151,	173
symptoms of 56, 113,	151
at Sindooree	114
treatment of	113
Butchers' shops of Calcutta and Suburbs ...	47
Butcher, Benares, evidence of	349
Buxoo Beparie, evidence of	386

C.

Calcutta and Suburbs, butchers' shops	47
byres, state of	vii
cattle disease in	41
statement of	613
dairies, cattle plagues in	613
epizootic	41
rinderpest in	188
statistics, remarks on	619
Camel epidemic, affection of	541
Campbell, Esq., A. E., answers to communication, form No. 4	281
on buffalo importation in Assam	335
G., on cattle poisoning ...	686
J., letter on cattle disease, Luckimpore	278
J. G., report of, Kishengunge ...	230
J. D., reports of, relating to Durrung	273
S., information given by ...	287
Canara cattle diseases, by J. Elphinston, Esq. ...	567
cattle disease in, cause of	567
time of	557
talooks affected in	568
treatment of cattle in	557
Carbolic acid, effect of	308
experiment with	124
Carcasses, disposal of 58, 123, 381,	494
in Debrooghur ... 290,	307
Kheree	513
rivers	301
Lokenathpore... ...	117
Carnegy, Esq., C. N., on cattle murrain, Kheree ...	513
Cases of murrain at Chooadangah	107
Cases of murrain at Bagdanga	170
Baloregunge	166
Belgachee	108
Belooriah	218
Benares	366
Bheershenee	182
Delhi	451
Dhunowra	409
Dohalee	247
Dowlut Dyar	106
Dukinkhara	183
Fuckeerpore	401
Gowrie	400
Humeerpore	384
Jawlinghur	412
Milchee	169
Mordaha	365
Narainpore	390
Nundpore	401
Paharpoor ... 524,	526
Pathalee	402
Racona	185
Reree	412
Secrole	365
Shaik Boreham	491
Shekoopoorah	478
Soobedarpore	390
Taltollah	110
Tengra Maree	107
Yakoobpore	411
Experimental	873
Hospital	819
Post-mortem	908
Cattle diseases at Sindooree	113
considered indigenous	147
Cause of cattle disease in Canara	557
Mooltan	490
Satkeera	122
Sealkote	470
Diamond Harbour epizootic ...	57
exemption of one village from cattle plague 283,	328
goli	455
karevao	555
mohara	554
mai	554
pheepree	555
zalooljunb	555
zardozi	555
Cawnpore, dairies of	386
rinderpest in 1863	387
district of	385
dealing in cattle in	387
foot and mouth disease in	386
rinderpest in, in 1868	386
station, visit to	386
Central Provinces	577
general summary	579
history of cattle disease in ...	579
index of records	577
Ceylon epizootic	41
history of cattle disease in	605
Chabry and Freeman, Messrs., statement of ...	725
Chamars, diseased meat eaten by	385
evidence of	385
of Belgatchee	109
Chapchapia, a disease in Kishengunge... ...	230
symptoms of	230
Chase, Esq., H. M., report of, on Allygurh cattle disease	413
Chechuck in Azimgurh	367
Gya	221
source of	400
symptoms of	489
in Tazpore	400
mortality from	400
Cheet Isapore, evidence recorded at	392
rinderpest in	392
Chendooroga, symptoms of	567
Chera, symptoms of	422

	Pages.
Chicklee, information regarding cattle diseases in ...	560
Chindwara, cattle disease in	587
symptoms of cattle disease in ...	587
Chittagong, district of	151
division	143
historical sketch of cattle plagues in	145
index of records	143
Chooadangah, census of	105
disease reported in	94
statistics of cattle disease in ...	623
remarks on	623
Choam ussia, a disease in Bhaugulpore ...	225
Chopchopia, a disease in Darjeeling	256
symptoms of	256
treatment of	256
Chorasee, cattle diseases of	560
Chorebagan, evidence recorded at	74
Chota Nagpore division	193
historical sketch of cattle diseases in	195
index of records ...	193
Chuckee, a disease in Chundpore	411
Chumparun, district of	221
Chundee, evidence of	382
Chundpore, diseases of	411
visit to	411
Chundowkie, rinderpest in	384
1869	385
visit to	384
Chupka in Aroonea	528
loss from	528
symptoms of 422,	528
Chuttukpore, evidence recorded at	258
Chhye, symptoms of	589
Chynepore, in Shahabad, reports of cattle disease in...	216
Cinnomara, Assam, cattle plague in	303
opposition to treatment in ...	303
Civilization and clearing causes of spread of murrain	vi
Clay, Esq., A. L., letter from ... 198,	199
Cloike, A., Revd., on the treatment of cattle disease...	301
Colaba, information regarding cattle diseases in ...	558
mooslya in	558
Colehan reports, Nos. 1, 2, 3, and 4	204
Collia, evidence of	322
Cologan, Captain, statement of	321
Colvin, Esq., B., letter from	421
Comber, Esq., B. E. C., evidence of	312
Committee at Benares to enquire into cattle plague ...	348
Commissariat cattle of Port Blair and Nicobar Islands	597
Lucknow affected ...	424
Department, Benares, report from ...	347
Lucknow	424
shed at Cawnpore, visit to ...	388
Conditions affecting the prevalence of murrains ...	vi
Condition of cattle ... ... 70, 172.	127
in Assam	285
Debroogurh	319
Kheeree	513
Shajehanpore	422
Tipperah	146
Contagiousness of *bhooknee*	498
cattle disease in Luckimpore ...	282
murrains	128
mān	451
hija	323
seetlah	402
vedun	411
Cooch Behar division	251
historical sketch of cattle plagues	253
index of records ...	251
localities affected	254
Coocher, evidence recorded at	384
rinderpest in	384
visit to	384
Coombs, Esq., H. A., letter of	280
Coompta, statistics of cattle plague in	568
Corbyn, Esq., J., treatment by	426
symptoms described by ...	426
Corowtee, evidence recorded at	527
Cosserat, Esq., A. W., report of, on diseases in Sonthal Pergunnahs	232
Cotton, Esq., H. J. S., evidence of	105
letter to the Magistrate of Nuddea	94
Course of cattle disease in Luckimpore ...	278
Benares	353
Cow-sheds, condition of, Bolaram Day's Street ...	71
Manicktollah	70
Sookea's Street	71
of Toltollah	110
Cowriram, evidence recorded at	217
rinderpest in	218
village visited	217
Culna, cattle hospital formed at	v
Cultivation, effect on, 182, 524, 381, 384, 385, 328, 104, 107, 56, 325, 115,	218
Curative treatment, description of	xxii
Cyst-infected meat, by Dr. Fleming	486
in Rawul Pindee	482
Meean Meer	488
Cystic disease in cattle, prevalence of, in Lahore ...	477
Cysts and tapeworms, remarks on, by Dr. Ross ...	484
Cyst diseases found by Dr. Fleming	487
prevention of	486
remarks on	xvi
Cysts in meat at Lahore	477
nature of 67, 487,	488
prevention of	488
Cystic meat	67
Daba in Shekoopoorah	479
Dacca, district of	140
division	135
cattle poisoning in	661
historical sketch of cattle plagues in	135
index of records	135
Dairies of Cawnpore	386
Dalton, Colonel E. T., C. S. I., letter from ...	196
Daniell, Esq., C. A., letter from	427
Dantowlee, mortality among cattle in	526
murrain in	526
symptoms of	526
treatment of cattle in	526
village, information regarding past murrains in	526
Darjeeling, *chopchopia* in	256
district of	255
murrain, symptoms of	258
Dashwood, Esq., H. W., letter from ... 690,	696
Date of outbreak of cattle disease in Luckimpore ...	281
Davidson, Lieut. Colonel J., letter from... ...	438
Major J., report of, on Lullutpore cattle murrain	438
Davies, Major W. G., letter from	475
Dawson, Esq., H., V. S., letter of, to Punjab Government	453
report by	452
Dealers in cattle at Cowriram	218
Tatee	387
evidence of	190
Dealing in cattle, Assam	285
Cawnpore	387
North Luckimpore	288
Madarkhat	328
Debee in Gowrie	400
Huneerpore	382
Terriah in 1860	401
infectiousness of	400
mortality from	401
origin of	400
other names of	382
symptoms of	382
Debrooghur, affected localities of	289
buffalo importation in	337
cattle disease in 1855 and 1869 ...	315

	Pages.
Debrooghur, evidence recorded at	315
history of cattle plagues in ...	289
sanitary measures adopted in ...	290
Deegnugger, villagers of	184
visit to	184
Deepchund Issury Chowdry, evidence of ...	400
Dehra Doon, cattle diseases of	414
district of	414
foot disease in	414
Delhi division ... 446,	450
historical sketch of cattle plagues ...	446
rinderpest in	451
Denra, village of, visited	170
Deno Nath Bose, evidence of	86
Devi, symptoms of	558
Dey, Dwarkanath, Baboo, judgment in cattle poisoning	659
Kanye Lall, Baboo, analysis of poison by ...	666
Dhappa, visit to	67
Dharwar district, statement of cattle disease in ...	568
history of cattle disease in	568
Dhukka, mortality from	492
symptoms of	492
Dhunowra, cattle plague in	409
vedun in	409
visit to	409
Dhoobrie, evidence recorded at	495
Dhurmsala, foot and mouth disease in	463
Diamond Harbour, cattle disease in	52
evidence recorded at ...	84
statistics of cattle disease ...	620
Dinagepore, district of	249
localities affected in	249
statistics regarding cattle disease in ...	249
Dinapore, cases of cattle poisoning in ...	670
information on cattle poisoning in ...	669
Diseased cattle, sale of, in Assam	301
meat bought by butchers ...	...70, 92
Dissent, J., Mr., evidence of	69
Dissent's, J., Mr., return of cattle diseases in Calcutta	613
District, Agra	402
Allahabad	394
Allygurh	413
Azimgurh	367
Baraitch	516
Bareilly	423
Benares	347
Bhaugulpore	231
Bijnour	421
Bograh	248
Boolundshuhur	409
Budaon	430
Cawnpore	385
Chittagong	151
Chumparun	221
Dacca	140
Darjeeling	255
Dehra Doon	414
Dinagepore	249
Durrung	270
Etah	403
Etawah	400
Furruckabad	403
Futtehpore	388
Ghazeepore	367
Gowalparah	261
Gya	220
Hazareebaugh	200
Hooghly	162
Humeerpore	378
Hurdui	509
Hyderabad (Sind)	564
Jaloun	438
Jhansi	438
Jessore	118
Kamroop	274
Lohardugga	196
Luckimpore	277
Lucknow	523
Lullutpore	438

	Pages.
District, Maunbhoom	198
Moradabad	427
Meerut	409
Moozuffernugger	414
Muttra	404
Mymensing	141
Noakhally	149
Nuddea	94
Oonao	521
Patna	220
Pertabgurh	516
Purneah	227
Rungpore	249
Saharunpore	412
Sambalpore	590
Sarun	222
Seebsaugor	277
Shahabad	213
Shajehanpore	422
Singbhoom	203
Sonthal Pergunnahs	231
Sylhet	139
Tipperah	146
Tirhoot	212
Twenty-four Pergunnahs	41
Division, Agra...	397
Allahabad	369
Assam	263
Benares	339
Bhaugulpore	223
Burdwan	153
Chittagong	143
Chota Nagpore	193
Cooch Behar	256
Dacca	132
Delhi	441
Hissar	455
Jhansie	435
Jullundur	463
Kumaon	431
Lahore	472
Meerut	405
Mooltan	489
Orissa	131
Patna	205
Presidency 31,	129
Rajshahye	237
Rawulpindee	499
Rohilcund	415
Roy Bareilly	507
Umballa	458
Umritsur	467
Dobson, Esq., F. H., evidence of ...	90
Dodd, Captain, report on poisoning of cattle ...	728
Dohalee, cases of murrain seen at	247
evidence recorded at	247
rinderpest in	247
visit to	247
Doniram, evidence of	324
Dooarmeree, evidence from...	188
Doorgaram Sirdar, evidence of	85
Dowlut Dyar, evidence recorded at	97
Dowlutram, evidence of	413
Dukkinhara, evidence recorded at	184
visit to	183
Duleep Sing, evidence of	381
Dum-Dum cattle market	65
Dumoh, cattle diseases of	586
Dunbar, Esq., W., letter from	196
Dunjeram of Sepahi Dora, evidence of... ...	258
Duration of *beadh*	201
ghutt	566
guttiar	564
murree	509
rorah 413,	451
vedun	409
Durrung, breeding of cattle in	270
buffalo importation in	334
cattle plagues, history of	270
trade in	270

Pages.

Durrung, reports regarding, by C. P. Bruce, Esq. ... 272
J. D. Campbell, Esq. 273
district of 270
housing of cattle in 270
uses of cattle in 270
Dutt, Woodoychund, Baboo, report of, regarding Purulia 190
Dwarika Nath Haldar, evidence of 85

E.

Eden, A., Hon'ble, letter from, to Government of India, Home Department ... 749, 759
Effect of improper feeding, a cause of plague ... x
prohibiting sale of skins 653
rain on *bhooknee*... 498
segregation 202
Ekdulla, report of cattle disease in 394
Eley, rinderpest at 180
Elphinston's, Esq., J., report on cattle diseases in Canara 567
Epizootic in Calcutta 41
Ceylon 41
Penang 41
Etah, cattle diseases in 403
summary of 403
district of 403
statement of mortality from cattle diseases ... 403
Etawah, district of 400
murrain in 400
Evidence of Abdool Gunny, meat agent in Benares 349
Ajmand 497
Alliga 322
Ally Hossein 351
Amanut Ali 65
Asab Tuppa 258
Asayest, a cow doctor 479
Banyram Roy... 187
Barooa, Nobinchunder, Baboo, .. 318
Bepotea Chamar 391
Blacquire, Mr. 43
Borick 327
Buxoo Bepari 386
Chamars 385
Chundee 382
Collia 322
Comber, Esq., B. E. C. 312
Deepchand Issury Chowdry ... 400
Doniram 324
Dowlut Ram 412
Duleep Sing 381
Dunjeram of Sepahi Dora... ... 258
Essur Ghose 105
Farrell, Esq., H., v. s. 292
Fatheh Shaha... 497
Futtick Ram 323
Geloong 259
Ghose, Sumbhoo Chunder, Baboo, ... 89
Gobra Thakoor 381
Golam Safdar 184
Golaub Thakoor 527
Goolab Aheer 527
Goyaram Thakoor 383
Goyrun, of Benares 351
Greenfield, Esq., T., v. s. 46
Gudadhur Barick 72
Gulab Sing 467
Gunga Chamar 383
Gunganauth, Moonsiff of Gowhatty ... 277
Hansari 456
Hurpershad Pandy 350
Herpershad Sing 228
Hood Gossain 331
Hurpal Sing, zemindar 390
Issur Chunder Gangooly 181
Jackson, Owen, Butcher Sergeant ... 476
Jadubeendoo Mozoomdar 188
Kassim Ally 386
Khodabux Chowdry ... 477, 478

Pages.

Evidence of Kedarnath Pundit, Agent of Maharaja of Benares 349
Lochun and Punchun 527
Lahor 329
Laljee Chamar 383
Lallbehary Roy 187
Madhub Chunder Ghose 180
Mahadoor Shamooz 492
Mahomed Ali 65
Mathbas 322
Mitter, Degumber, Baboo,... ... 81
Modhoosoodun Chatterjee 164
Modun Mohun Dollar 257
Mohun Gossain 332
Monteith, Mr. 43
Moonga Goojur 413
Moosah Kolita 330
Muckwood 526
Muhesh 352
Muliah 326
Muloha 329
Murphy, Sergeant, Commissariat Department 386
Muthooranath Persad 382
Neema of Kamalia 493
Nobin Chunder Burooah, Baboo, ... 318
Nundlall 383
Pema Goalla 455
Perks, Mr., station butcher of Benares... 349
Pusain Aheer 526
Ramchunder Misree 176
Ramnarain 525
Rewati Aheer 527
Sadun Chunder 322
Shaik Mahomed 493
Shewchurn 401
Sittaram Aheer 392
Stalkartt, Esq., J. 78
Syed Sekawut Hossein 276
Taffel Abamad... 184
Tarinychurn Chuckerbutty ... 180
Teil, Mr. 45
Tenchung Bhootea 258
Thakoor Mulla 385
White, Mr. J. 260
Esq., J. B., Assistant Surgeon ... 309
villagers, Baloregunge 165
Belooria 219
Bheershenee 183
Bood-Bood 184
Madarkhat 328
precis of, of cattle poisoning ... 615
recorded at Bankipoorah 401
Benares 366
Bijnour 524
Bunni 526
Buntbra 527
Cawnpore 386
Cheet Isapore 392
Chuttukpore 258
Coocher 384
Corowtee 527
Debrooghur 315
Dhoobrie 495
Dohalee 247
Dukhin Khara 184
Gowrie 400
Hingota 383
Hissar 455
Humeerpore 381
Kamalia 493
Koka 478
Kurnaul 451
Katgora 179
Lahore 476
Lahowl 324
Madakur 403
Madarkhat 326
Modhoobanee 227
Moniejar 383

	Pages.
Evidence recorded at Narainpoor	390
Oonao	526
Paharpoor	525
Pathalee	402
Pathara	383
Pootna	186
Rameree	381
Rampore	385
Satmundy	187
Shaik Boreham	491
Shekoopoorah	478
Sianugger	401
some villages near Agra ...	402
Soobedarpore	389
Sonada	261
Tatee	387
Tazpore	400
Vadala	467
taken on the road between Kurseong and Sonada	873 257
Exemption, cause of	283
from cattle disease of one village ...	328
Experimental cases	873
Experiments of inoculation	42
Exportation of cattle	172, 148, 227, 317
Extract from the Records of Medical Department, Bengal (No. 36)	196

F.

Fair for cattle at Baneepore	66
Muckimpore	386
Puddobilah	66
Wooltadanga	63
Farrell, Esq., H., v. s., letter from, on Shillong cattle disease	299
letter to Magistrate of Jessore	118
on Debroogurh cattle disease	292
on Jessore cattle disease ...	120
report on Assam cattle plague	300
cattle poisoning ...	655
Diamond Harbour cattle plague ...	57
result of his treatment ...	125
steps taken to prevent disease in Jessore	118
Fatheh Shaha, evidence of	497
Feeding of cattle in Benares	366
Kheeree ...	512, 513
Khokar	493
Lahowl	325
Shekopoorah	478
Soobedarpore	389
Umritsur	468
and watering of cattle, Assam ...	285, 317
Debrooghur ...	319
Hooghly ...	172
Khoolnah ...	127
North Luckimpore ...	288
improper, effects of, a cause of plagues ...	x
Ferozepore, cattle diseases of	475
statistics of cattle diseases in ...	475
Fever, inward, of cattle in Calcutta	41
Fleming, Dr., on cyst-infected meat	486
Flooko, symptoms of	255
(rinderpest) in Bhootan	255
treatment of	255
Fodder, scarcity of, in Humeerpore in 1869 ..	385
want of, in Sonthal Pergunnahs ...	232
Foolbaga, a cattle disease	218
Foot and mouth disease in Baragow Tatea ...	387
Benares	366
Bijnour	524
Bunthra	527
Cawnpore	386
Commissariat shed, Cawnpore	388
Debrooghur ...	318
Dhowkhoa Khana ...	284

	Pages.
Foot and mouth disease in Dhurmsala	463
Humeerpore ...	381
Kukoorie	387
Koka	478
Lahoreemow ...	385
Morar	440
Commissariat cattle	440
Nundpore	401
Rampore	385
Shajehanpore ...	423
Soobeydar-ka-Poorwa ...	392
infectiousness of ...	524
prevalence of ...	xiv
remarks on	xiv
treatment of ...	xiv
vernacular names of ...	xiv
disease in Dehra Dhoon	414
Fowls, disease of	43
Foy, Esq., A., on cattle murrain in Kheree ...	512
Freeman and Chabry's, Messrs., statement ...	725
Fuckeerpore, cases seen at	401
visit to	401
Fumigation with *dhoona*	168
Furuckabad, abridged statement regarding cattle disease in	403
district of	403
Futtehpore, district of	388
murrain, tabular statement of ...	393
Futteh Sing, Sub-Assistant Surgeon, remarks of, on cattle disease	469
Futtick Ram, evidence of	323
Fyzabad division, history of cattle plagues in ...	506
poisoning of cattle in	737
summary of cattle diseases in ...	506

G.

Garrett, Esq., C. B., information on cattle poisoning	674
Gatterawan, derivation of	516
Geloong, evidence of	259
Geographical distribution of murrains	vii
Ghazeepore, district of	369
Ghoorka disease in Sagur	585
Ghootko, symptoms of	565
Ghorey, symptoms of	422
Ghose, Kalinath, information obtained from ...	140
Sumbhoo Chunder, evidence of	89
Ghutt, symptoms of	566
Ghuturooa, derivation of	516
Gilchrist, Dr., on epizootic disease	539
Goallahs of Mitter's Lane, Calcutta, prosecution of ...	72
Gobordhone Ghose, evidence of	168
Gobra Thakoor, evidence of	381
Godie Joarder, evidence of	190
Golaghat, importation of buffaloes in	335
mortality from cattle plague in ...	278
outbreak of cattle disease in	278
report of cattle disease in	278
tabular statement of cattle disease in ...	281
Golam Safdar, evidence of	184
Golaub Thakoor, evidence of	527
Goli, symptoms of	456
cause of	455
medicines in	455
treatment of	456
Goolab Aheer, evidence of	527
Gooldia, symptoms of	456
treatment of	456
Gooldun, symptoms of	456
Goorgaon, murrain in	451
Gooroochurn Moochee, examination of	98
Goorun, a cowherd in Benares, evidence of ...	351
Gootee and *puschima*, identity of	123
hides	228
importation of	228
in Diamond Harbour	56
Kishengunge, symptoms of	230
Tirhoot	212
said to be caught from man	148

	Pages.
Gopalkisto Banerjee, a money-lender, evidence of ...	168
Gor village, evidence recorded at	186
Goruckpore, poisoning of cattle in	713
rinderpest at	186
Government cattle should be placed in medical charge of Veterinary Surgeons	xvii
slaughter cattle attacked with plague, 347,	449
Gowalparah, district of	261
history of cattle plagues in ...	261
Gowhatty, cattle disease in, history of	276
evidence recorded at	276
Gowrie, cases seen at	400
debee in	400
evidence recorded at	400
visit to...	400
Gowthon sitlah in Baragow Tatea	387
Gyaram Thakoor, evidence of	383
Graham, Captain, report on Benares cattle disease and poisoning	362
Grant, Esq., G., letter of	274
J. P., letter from	190
Grasses grown in Koolna	127
in Moniejar	383
of Jhung	499
Shekoopoorah	478
Grazing grounds a condition affecting murrains ...	vi
Greenfield, Esq., T., v. s., evidence of	46
Gregory, J. Captain, evidence of	290
on importation of cattle disease in Luckimpore	278
Gudadhur Barick, evidence of	72
Gujranwalla, information regarding cattle disease in	450
bar, cattle disease in	472
Gulsondee and *malvee rog*, identity of	560
symptoms of	560
Gulab Sing, evidence of	467
Guneshpore, rinderpest in	391
Gunga Chamar, evidence of	383
Gunganath, Moonsiff of Gowhatty, evidence of ...	277
Gungpore, visit to	180
Guttiar, symptoms of	564
Gwalior, cattle disease in	424
remedies for	425
symptoms of	424
Gya, cattle disease in	220
chamars, connection of, with moochees of Hazareebaugh in cattle poisoning	667
district	220

H.

	Pages.
Hafizabad, loss in rupees from cattle plague ...	450
Tehsil, statistics of cattle plagues in ...	450
Hallet, Esq., J. R., letter from	190
Halliday, Esq., F. M., report on cattle poisoning ...	677
Hannah, Esq., W. C., evidence of	93
Hannay, Esq., H. E. S., evidence of	319
Hansari, evidence of	456
Hardinge, Esq., R. T., letter from	404
Harrison, Esq., J. F., judgment in a case of cattle poisoning	662
Harvey, R., Mr., evidence of	77
Hatikatta, cultivation of	115
inundation in	115
visited	114
Hazareebaugh, cattle disease in	200
district of	200
Ooreyah village in	201
report from, by Lieutenant Colonel H. M. Boddam on cattle poisoning ...	667
report of cattle disease in ...	200
statistics of cattle murrains ...	200
Hedayut Ally, Captain, report of, on cattle poisoning	671
Henvey, Esq., F., letter from	378
Hepbaj, symptoms of	560
Herding, effect of, on the prevalence of murrains ...	vii
of cattle, remarks on, as cause of plague ...	xi
in Assam ...	285, 317
Debrooghur	319
Herding of cattle in Hooghly	172
Kheeree ...	512, 513
Khoolnah	127
Shajehanpore	422
North Luckimpore ...	288
Hurpershad Pandy, Cattle Daroga, Benares, evidence of	350
Heriberri, symptoms of	574
Hide trade	93, 65, 172
in Akna	168
Baloregunge	165
Belooria	246
Chooadangah	106
Kheeree	513
Khoolnah	127
Luckimpore	285
Purneah	228
Sindooree	114
Soobeydar-ka-Poorwa	391
Lokenathpore	117
remarks on	65
by Cattle Plague Commission	xii
Hides	64
annual supply of	228
contract for sale of	70
dealers of	147
disposal of	58, 392, 411
in Benares	366
Bijnour	524
Debroogurh	320
Jessore	121
Kakoorie	387
Tatee	387
Umritsur	468
exportation of, from Kheeree	512
in Bood-Bood	188
Jhung, disposal of	499
Mirzapore	181
Paharpoor	525
Shekoopoorah	479
Soobeydar-ka-Poorwa	391
Kooshtea, advances made for... ...	653
mode of curing, Humeerpore	383
of Meerut	388
price of	93
qualities of	43, 44
removal of	123
supply of	388
taken by moochees	148
taken to Dacca	148
varieties of 93,	383
Higgs, Revd. H. E., evidence of	315
Hija in Madarkhat	323
description of	326
history of 323, 325,	326
infectiousness of	323
in Lahowl	324
mortality from	323
origin of	325
symptoms of 323, 324,	326
Hills affecting the prevalence of murrains ...	vi
Hills, Esq., A., evidence of	104
Hingota, a village in Humeerpore	383
evidence recorded at	383
matah in	383
Hirey byanee, symptoms of ... 568,	575
Hissar Cattle Farm, return of cattle that have died from diseases in	457
cattle, post-mortem appearances of murrain...	452
division	452
historical sketch of cattle plagues in	446
evidence recorded at	455
rinderpest at	386
treatment adopted in murrains	453
Historical sketch of cattle plagues in Agra Division	399
Allahabad Division ...	373
the Andaman Islands ...	595

	Pages.
Historical sketch of cattle plagues in Assam ...	267
Benares division ...	343
Bhaugulpore...	225
Bombay ...	549
Burdwan division ...	159
Burmah ...	591
Chittagong division ...	145
Chota Nagpore	195
Cooch Behar...	253
Dacca division	135
Delhi division	446
Hissar division	446
Jhansie division ...	437
Jullunder division ...	447
Kumaon ...	433
Lahore division	448
Madras ...	531
Meerut division	407
Mooltan division ...	449
Orissa division	133
Oudh ...	505
Patna ...	209
Presidency division ...	37
Punjab ...	445
Rajshahye ...	239
Rawulpindee...	449
Rohilcund division ...	419
Umballa division ...	447
Umritsur division ...	447
History of *bhawanee* in Humeerpore	381
budda azar	541
bulia	563
burra azar	539
epizootics	57
jahani	327
mai	554
manoon 458, 468,	477
matah	480
moopung	540
peer	492
vair	493
cattle plagues in Agra district ...	402
Ahmedabad ...	562
Ahmednugger ...	571
Akna	167
Benares	366
Central Provinces ...	579
Ceylon	605
Debroogurh ...	320
Dharwar ...	568
Durrung	270
Fyzabad	506
Goalparah ...	261
Gowhatty ...	276
Gujranwalla ...	474
Hyderabad (Sind) ...	564
Jabalpur	585
Jessore	123
Kamroop ...	274
Kheeree	514
Khoolnah ...	127
Lassa in Thibet ...	259
Luckimpore 285,	317
Lucknow	508
Mungledye ...	270
Nepal	607
North Luckimpore ...	588
Punch Mehals ...	559
Roy Bareilly division ...	507
Sagur	585

	Pages.
History of cattle plagues in Seetapore division ...	505
Sehwan	563
Shahbundur ...	564
Shajehanpore ...	423
Shikarpore ...	565
poisoning...	645
Hitchens, C. T., Captain, statement from ...	203
Hobart, Esq., R. T., letter from	403
Honore, statistics of cattle plague in	568
Hood Gossain, evidence of	331
Hooghly, district of	162
reports on cattle poisoning, by H. Pellew, Esq.	666
statement showing mortality from cattle disease in	163
Hopkins, Esq., J. A., judgment of, in cattle poisoning	666
Hoshungabad, statement of cattle diseases in ...	588
Hospital for cattle in Purulia	199
suggested	174
at Culna, cases of	823
Housing of cattle 172,	317
as a cause of plague	x
in Assam	285
Beercoonda	245
Kheeree ... 512,	513
Khoolnah	126
Modhoobaree village ...	227
North Luckimpore ...	228
Rameree	382
Shajehanpore	422
Soobedarpore	389
Hoven, remarks on	xiv
Hubak, symptoms of	456
Hudson, Esq., W. B., information on cattle poisoning	674
Humeerpore, *bhawanee*, prevalence of	381
cases seen near	384
debee in	382
district of	378
evidence recorded at	381
fairs and markets in	381
foot and mouth disease in... ...	381
statement of mortality in, during scarcity of pasture	380
stock of Rameree	381
want of pasturage in 1869 ...	378
Hurdui, *burree* in	509
district of	509
information regarding cattle diseases in ...	509
statistics of cattle plagues	509
Hurpal Sing, a zemindar, evidence of	390
Hurprosad Singh, evidence of	228
Hurro Chunder Sen, evidence of	73
Hyderabad (Sind), cattle diseases of	564
district of	564
history of cattle diseases in ...	564

I.

Ichak and Ooreyah, register of cases of cattle disease	202
statistics of cattle disease	202
Identity of *apri* and *badee*	555
bulia and small-pox	559
burki and *mirgee*	555
cattle disease in Ichak and Ooreyah ...	202
gootee and *puschima*	123
karevao and *seemuk*	555
mohara and *moopukka*	554
mota rog and *waryacha rog* ...	575
peer, *syal*, and *matah*	492
pheepree and pleuro-pneumonia ...	555
rinderpest, Indian and European ...	xviii
vair with *seetlah*	493
zardozi and *kuluji-ka-durd* ...	555
Importation of cattle disease in Debrooghur ...	306
Bengalee buffaloes in Assam ...	283
buffaloes in Assam	333
Debrooghur ...	337
Durrung	334
Golaghat	335

Pages.

Importation of buffaloes in Kamroop 333
Luckimpore ... 336
Mungledye 336
Nowgong 334
bulls in Lahore 477
cattle 127
Assam 285
Soobedarpore 389
disease in Debrooghur ... 289
Luckimpore 278
Punsoor 168
Tipperah ... 147, 283
Khena 187
Moorung 227
Imported Bengal cattle not affected by plague at Bisnath in Assam 299
Index of records of Bombay Presidency ... 547
Central Provinces 577
Agra division 397
Allahabad 369
Assam 263
Benares division 339
Bhaugulpore 223
Cooch Behar 251
Jhansie division 435
Kumaon division 431
Meerut division 405
Oudh 501
Punjab 441
Rajshahye 237
Rohilcund division ... 415
statistical statements 611
Indian Cattle Plague Commission, objects of ... iii
recommendations of xxviii
report of ... iii
Indigo planters of Tirhoot 212
Infection carried by man 319
other animals liable to 287
Infectiousness of *bhawanee* 381
hija 318
debee 385, 400, 401
maora 289
debee in Soobeydar-ka-Poorwa ... 391
foot and mouth disease ... 524
khoorah 391
matah 366
murrain in Bareilly 426
pokna in Paharpore 525
murree 509
rorah 413
vedun 411
Inoculation of children in Moorshedabad ... 240
result of 240
Inquiry, extension of sphere of, of Indian Cattle Plague Commissioners iii
mode of, by the Indian Cattle Plague Commissioners iii
mode recommended for further v
necessity of continuing v
regarding murrains in India complete up to 1870 v
Inspection of meat in Lahore by Cattle Plague Commissioners 480
Insulation, a condition affecting murrains ... vi
Investigation, personal, a principle of operation ... iv
Issur Chunder Gangooly, evidence of 181

J.

Jabalpur, history of cattle disease in 585
Jadubundoo Mozoomdar, evidence of 188
Jackson, Owen, Butcher Sergeant, evidence of ... 476
Jadub Ghose, evidence of 75
Jahani, a disease in Madarkhat 327
history of 327
infectiousness of 327
origin of 327
symptoms of 327
Jaloun, cattle disease in 438

Pages.

Jaloun, district of 438
Jaria, symptoms of 455
Jansuth, disease in 414
Jawlunghur, cases seen at 412
khoorah in 412
statistics of 411
visit to 111
Jeeruck, murrain in 563
statistics of cattle diseases 564
Jenidah, cases of cattle poisoning in 655
Jenkins, Esq., E. G., letter from 412
Jenkinson, R. P., Esq., letter from 213
Jessore, cattle disease in 1869 120
reported by H. Farrell, Esq., v. s. 120
district of 118
history of cattle disease in 120
information regarding cattle poisoning in ... 655
mortality from cattle disease in ... 120
people, apathy of 118
Jhansie, district of 438
division 435
historical sketch of cattle diseases ... 437
index to records of 435
Jhung, cattle breeding in 498
information regarding cattle diseases in ... 490
loss in money from cattle disease ... 491
loss of cattle in 491
mortality from cattle disease in ... 491
price of cattle in 498
season of cattle plague in 498
uses of cattle in 498
want of pasture in 498
Jogessur Koloo, evidence of 166
Joint grazing and herding, effects of 167
Joran or *gootee* disease, Tipperah 147
symptoms of 147
treatment of 147
Jounpore, cattle disease in 362
Journal of proceedings of Cattle Plague Commissioners v
Joykissen Mookerjee, statistics of cattle diseases ... 175
Joypore, visited 169
Judgment of A. C. Wright, Esq., in the case of Perlad Moochee for cattle poisoning 655
in cases of cattle poisoners, Chunder and Premchand Chamars ... 655
J. A. Hopkins, Esq., in a case of cattle poisoning 666
J. F. Harrison, Esq. 662
T. Kirkwood, Esq. 663
W. C. Taylor, Esq. 662
Baboo Dwarkanath Dey... ... 659
Baboo Callynath Bose 663
Jugudumba, a disease in Sahibgunge 235
Julalpore, mortality from cattle disease in ... 379
Jullundur division 463
historical sketch of cattle plagues 447
statement of cattle disease in ... 464
Jumma for hides 107
Jungpeen, evidence of 259

K.

Kakoorie, disposal of hides in 387
foot and mouth disease in 387
rinderpest in 387
stock of 387
supply of cattle in 387
visit to 387
Kakoowara, cattle diseases in 158
visit to 458
Kalberri, symptoms of 574
Kally Sheik, evidence of 87
Kamalia, cause of mortality among cattle in ... 494
evidence recorded at ... 493, 494, 495

	Pages.
Kamalia, *vair* in	493
Kamokee, information regarding cattle disease in ...	476
bhooknee in	476
Kamroop, buffaloes, importation in	333
cattle disease, course of	277
disease of cattle in	277
district of	274
Kangra, cattle disease reported by Lieut.-Col. Mercer.	463
Kamnara, outbreaks of	181
visit to	181
Kurevao and *seemuk*, identity of	555
cause of	555
nature of	555
symptoms of	555
treatment of	555
Kartick Haldar, evidence of	87
Kassim Ally, evidence of	386
Katcheekatta, visit to	112
Katgora, rinderpest in	179
visited	178
Kaye, Esq., W., letter from	423
Kerr, Hem Chunder, Baboo, report by, on cattle disease	53
letter from ...	63
Khakatiago, outbreak of cattle plague in ...	283
Khandeish, information regarding cattle murrain in	561
report from Collector	561
Khang, derivation of	516
Khasi Hills, disease of cattle in	277
Khena, disease prevailing in	187
evidence recorded at	187
Kheeree, breeds of cattle in	512
cattle plagues, names of	514
condition of cattle in	513
crops of	572
exportation of hides from	512
feeding of cattle in ...	512, 513
herding of cattle in ...	512, 513
hide trade in	513
housing of cattle in ...	512, 513
locality of	512
mortality from cattle disease ...	512, 514
number of cattle in	513
poisoning of cattle in	734
price of cattle in	513
statistics of cattle plagues for 1867 ...	514
stock of	512
summary of returns of cattle diseases ...	511
Khetoo Moochee, evidence of	188
Khodabux, evidence of	477, 478
vs. Perlad Moochee, case of cattle poisoning	655
Khokar, cattle diseases in	493
feeding of	493
loss of cattle in	494
price of cattle in	494
soil of	493
uses of cattle in	493
Khoolnah, cattle of	126
plagues, nature of	127
hide trade in	127
report on cattle diseases of	125
Khoorah in Jawlinghur	412
Lokenathpore	117
Narainpore	391
Soobedarpore	389
infectiousness of	391
liability to attack of	411
mortality from	411
repeated attacks of	110
symptoms of . 114, 389, 391,	411
Khoorkhoot, symptoms of	559, 576
Khoorpucca in Srinugger	402
symptoms of	402
Khurchun, symptoms of	560
Khurmund mowaso, symptoms of	561
Kedarnath Pundit, Benares, evidence of ...	349
Kidderpore fair, cattle seen at	64
Kirkwood, Esq., T., judgment of, in a case of cattle poisoning	663
Kirwee, cattle disease, statements regarding	377, 388

	Pages
Kishengunge, names of diseases in	230
report from, by J. G. Campbell, Esq.	230
Kistogopal Boiragee, evidence of	117
Kochatie, village of, visited	169
Koka, evidence recorded at	478
rinderpest in	478
Kombar Alli, evidence of	92
Koolchara, evidence recorded at	104
Kooloo, information regarding cattle disease in ...	464
Koonch, cattle disease in	438
treatment of cattle disease in	438
Koorug moorug in Kooloo	464
symptoms of	464
Kooshtea, list of cases of cattle poisoning in ...	654
mode of operation in cattle poisoning in ...	653
Kotkhall Pergunnah, statement regarding ...	463
Kuchha, a disease in Sikhim	258
Kulpee, information about cattle diseases in ...	86
Kumaon division	431
index of records of	431
historical sketch of cattle plagues in ...	433
mān in	433
Kunjala, a disease in Kishengunge	230
symptoms of	230
Kurjunny, poisoning with	667
Kurnaul cattle murrain, treatment of	454
disease, symptoms of, by H. Dawson, Esq., v. s.	454
evidence recorded at	451
mān in	451
murrain, remarks on, by H. Dawson, Esq., v. s.	454
rorak in	451
Kurseong, bullock train cattle in	257
cattle diseases in...	257
rinderpest and foot and mouth diseases ...	258
visit to	256

L.

Lag, symptoms of	492
Laga roga, symptoms of	567
Lahor, evidence of	329
Lahore division	472
historical sketch of cattle plagues in...	418
evidence recorded at	476
importation of cattle in	477
meat inspected at, by Cattle Plague Commissioners	480
post-mortem examination in, by Cattle Plague Commissioners	480
tapeworm in	480
Lahoremow, foot and mouth disease in	385
rinderpest in	385
scarcity of provender	386
village, visit to	385
Lahowl, evidence recorded at	324
Lal Chand Marik, evidence of	74
Laljee Chamar, evidence of...	383
Lall Behary Roy, evidence of	187
Lamb, T., Major, letter of	273
statement of	270
Lassa, history of cattle disease in	259
Laughton's, Captain, report on Port Blair and Nicobar Islands, cattle disease	597
Lawrence, Esq., A. J., on Benares cattle disease and poisoning	364
Legislation, necessity of	xxv
Legislative measures, papers on ...	747 to 817
Liability of animals to attack, Debrooghur ...	320
Golaghat ...	278
buffaloes to attack	451
cattle to attack, North Luckimpore ...	288
goats and sheep to attack of *chechuck* ...	400
other animals to attack, North Luckimpore	289
murrain .	282, 479
debee ...	382
of sheep and goats to attack ...	526
to disease of sheep and goats ...	107

Pages.

Liston, Esq., J., report on cattle plagues in Lullutpore 439
statistics of cattle plagues, Lullutpore, by... 439
Local observation, a principle of operation ... iv
Lochun and Punchun, evidence of 527
Lockwood, Esq., E. D., letter of, on Tipperah ... 146
to the Commissioner, Chittagong .. 148
Lall Chund Haldar, evidence of 88
Lohardugga, district of 196
Lokenathpore, statistics of cattle disease in ... 117
visited 117
Loodianah, cattle diseases in 459
Loss from *chupka* 528
puschima 167
rinderpest 391
in Coocher 384
Losses from cattle disease 57
rinderpest, Humeerpore 385
Rampore 385
in money in Hafizabad from cattle plague ... 450
Jhung from cattle diseases ... 491
of cattle annually 70
by murrain xxi
starvation in Tatee 387
in Calcutta for 1868-69 619
Debrooghur 318
Jessore 121
Khokar 494
Manicktollah 70
Luchmunpoor, outbreak in 231
Luckimpore, buffaloes, importation in 336
cattle plagues, history of 285
disease, symptoms of ... 282
treatment of ... 282
district of 277
hide trade in 285
infected localities of 284
outbreak of cattle plague 277
uninfected localities of 284
uses of cattle in 284
Lucknow Commissariat cattle affected 424
deaths of... ... 424
segregation of ... 424
district of 523
division, history of cattle plagues ... 508
history of cattle diseases in 523
preventive measures in 523
summary of returns of cattle diseases in... 529
Lugard's, Captain, report on cattle disease in Raipore 589
Lullutpore, cattle diseases in 438
murrain, Major J. Davison's report on 438
plagues, report on, by J. Liston, Esq., 439
district of 438
murrain in 439
symptoms of 440
statistics of cattle diseases 439
Lyell, Esq., J., letter from 299

M.

Macnaghten, Esq., E., report on cattle poisoning .. 677
Macnamara, M. D., F. N., chemical analysis of poison by 665
Macpherson, Esq., W., report on cattle poisoning ... 661
Madarkhat, evidence taken at 327
of villagers of 328
recorded at 326
murrain in 323
statistics of cattle disease in ... 631
Madhub Chunder, Baboo, evidence of 86
Ghose, evidence of 180
Madhub Sadhookhan, evidence of 87
Madras, historical sketch of cattle plagues in ... 531
names of rinderpest in 538
narrative of cattle disease in 543
Presidency 531
treatment in, by Thacker, Esq., J., v. s. ... 544
Mahadoor Shamooz, evidence of 192
Maharoga, symptoms of 567
Mai and *matah*, identity of 551
cause of 551
history of 551
in Dhoobrie 495
mortality from 554
symptoms of 554
treatment of 554
Mān in Kumaon 433
Kurnaul 151
mortality from 451
Maunbhoom, district of 198
information on cattle poisoning ... 668
Mandvee, information regarding cattle disease in ... 560
Manickgunge, report on cattle disease in ... 141
statistics of cattle plagues in ... 140
Manicktollah, cattle diseases of 73
rinderpest of 72
whence purchased 72
dairies 70
Manoon, history of 458, 468, 477
source of 458
spread of 458
symptoms of 458, 478
in Kakoowara 458
Man's, Colonel, report on cattle disease in Port Blair and Nicobar Islands 597
Markets, a source of the spread of disease among cattle 12
and fairs in Humeerpore 381
of cattle 172
in Debroogurh 320
Dum-Dum 65
Gugneer 385
Kidderpore, visit to ... 64
Shekopoorah 478
Tatee 387
Umritsur 468
meat, of Calcutta 47
Matah and *mai*, identity of 554
history of 382, 480
infectiousness of 366
in Hingota 383
Benares 366
Lohardugga 196
Pathara 338
Raipore 589
Rameree 382
Singbhoom 196
mortality from 382
nature of 491
other names of 382
peer and *syal*, identity of 492
period of outbreak of 196
post-mortem appearance of 383
report on, in Calcutta 11
scarcity, cause of 382
source of 366
symptoms of 41, 196, 382, 384
treatment of 366
Mathbas, evidence of 322
Maxwell, Esq., W. B., on cattle disease, Sylhet ... 110
McNeile, Esq., J. D., letter from 192
McReddie, Dr., remarks on cattle murrain in Hurdui 509
Meean Meer, cyst-infected meat in 488
Meat affected with cyst 67
dead and diseased, consumers of 11
inspected in Lahore by Cattle Plague Commissioners 480
market, Dhurrumtollah 67
markets, Calcutta 67
market, Colinga 67
Tiretta Bazaar 67
Medical Board Circulars, 16th February 1836 ... 161
Department, Bengal, extracts from records in 1834 and 1836 ... ... 161; 196
Meerut, district of 405
division 405
historical sketch of cattle plagues ... 407

	Pages.
Meerut, division index of records	405
hides	388
rinderpest in	386
Meherpore, cattle poisoning in	653
Mendai Moochee, examination of	98
Mercer, Lieut.-Colonel, on Kangra cattle disease ...	463
Metcalfe, Esq., C. T., information on cattle diseases	221
Midnapore, report on cattle poisoning from ...	666
Milchee, village of, visited	169
Miles, F. N., Major, report of, regarding cattle disease, Gya	221
Mills, Lieut.-Colonel H., letter from	424
Mirzapore, rinderpest at	181
visit to	181
Mitter, Degumber, Baboo, zemindar, evidence of ...	81
Modan Mohun Dollar, evidence of	257
Mode of operation in cattle poisoning	649
in Kooshtea ...	653
recommended for further inquiry by Cattle Plague Commissioners	v
Modhoosoodun Chatterjee, evidence of	164
Modhoobanee, evidence recorded at	227
visit to	227
Modhoo, Christian, evidence of	89
Modibooddin Joarder, evidence of	102
Mohara and *moopukka*, identity of	554
cause	554
definition of	554
mortality from	554
symptoms of	554
treatment of	555
Mohasook Lall, statement of	402
Mohun Gossain, evidence of	332
Mokh, cause of	458
in Umballa	458
treatment of	458
varieties of	458
Momdhah, mortality from cattle plague in ...	379
Monghyr, cases of cattle poisoning in	680
Moniejar, *bhawanee* in	383
evidence recorded at	383
Montgomery, cattle diseases in	489
Monteith, Mr., evidence of...	43
Mookerjee, Joykissen, Baboo, zemindar, replies to queries of Cattle Plague Commission ...	171
Mooltan, cattle disease in	490
division	489
historical sketch of cattle plagues in	449
Moonga Goojur, evidence of	413
Moopucca, a disease in Allyghur	413
and *mohara*, identity of	554
Moopaung, history of	540
symptoms of	540
treatment of	540
Moorshedabad, summary of reports of cattle diseases	243
Moosha Kolita, evidence of...	330
Mooslya, a disease in Colaba	558
symptoms of	558
Moradabad, cattle diseases of	427
district	427
tabular statement of cattle plagues in	429
pukka, a disease in	427
statistics of cattle plagues ...	427
villages of	427
cases seen at	365
Morar, foot and mouth disease in	446
Mortality among cattle in Assam	304
Bancoorah	191
Bareilly	426
Chooadangah ...	105
Dantowlee	526
Debrooghur	307
Diamond Harbour ...	52
Durrung	279
Golaghat	278
Hissar	457
Hooghly	173
Humeerpore ...	378
Jessore (1869)	118, 120

	Pages.
Mortality among cattle in Jhung	491
Julalpoor	379
Kamalia	494
Kheeree ...	512, 514
Luckimpore ...	277
Madarkhat ..	323, 324
Momdah	379
Sasseeram, statement of...	215
Seebsaugor ...	277
Shekopoorah ..	479
Tipperah	147
Seetapore	515
from *bhawanee*	381, 389
birki	555
bussunto	111, 113
chechuck	400
debee	401
dhukka	492
khoorah	411
khuchha	259
mai	554
mān	451
matah	382
mohara	554
pheerpree	456
rinderpest	218, 385
rorah	451
suth	492
vedun	409, 411
of cattle from *matah* in Calcutta, 1843-44 ...	42
Commissariat cattle in Lucknow ...	424
Morton, W. B, Major, letter from	256
report of	255
Morung, description of	227
pasturage in	227
rinderpest in	227
Morunga, case seen at	227
village visited	227
Mota rog and *waryacha rog*, identity of ...	575
symptoms of	575
Moth Bakooli, evidence of	75
Mothom Wodock, evidence of	85
Moulvie Shah Mahomed Isheq, decision of, in case of cattle poisoning	679
Mour, a disease in Kamroop	275
Mowar, a disease in Durrung	273
symptoms of	326
in Madarkhat	323
Mowaso, symptoms of	559, 560
Mowassa, symptoms of	563
Moozuffernugger, district of	414
Muckimpore cattle fair	386
Muckood, evidence of	526
Madakur, evidence recorded at	403
Mohesh, a cowherd in Benares, evidence of ...	352
Muhpusijah, a disease in Belooria	219
Muir, Dr., on cyst disease and tapeworm ...	481
Esq., J. F., report of ca tle diseases in Central Provinces	582
Mukhuri, symptoms of	490
Muliah, evidence of	326
Mulliabad, statistics of cattle diseases	523
Tehseel, statement regarding cattle disease in	523
Muloha, evidence of	329
Mundla, cattle disease in	586
Mungledye, buffalo importation in	336
history of cattle plagues in ...	270
Municipal Gowkhana at Boitakhana Calcutta ...	77
cattle diseases in ...	76
condition of cattle in ...	76
evidence recorded at ...	75
history of cattle disease ...	75
supply of cattle in ...	76
uses of cattle in	76
platform, Dhappa	67
Munjunpore murrain, report of, by R. Yeatman, Esq.	394
Murdari hides, source of	388
Meerkaserai, villages affected	152
Murphy, Sergeant, Commst. Dept., evidence of ...	386

	Pages.
Murrain in Agra Tehsil	402
Bareilly	425
Bijnour	524
Bood-Bood	182
Bunthra	527
Dantowlie	526
Debrooghur	315
history of	320
Etawah	400
Goorgaon	451
Jessore	118
Lullutpore	438, 439
Madarkhat	323
Paharpore	525
Palamow	197
conditions affecting the prevalence of ...	vi
geographical distribution of	vii
Murree in Hurdui	509
infectiousness of	509
symptoms of	509
Muthooranath Persaud, evidence of	382
Muttra, cattle diseases in	404
district of	404
Mymensing, cattle murrain in	141
district of	141
inundation in	142

N.

Nagpore, information regarding cattle diseases in ...	585
Nalla, a division in Sonthal Pergunnahs .	232
cattle disease in	232
Narainpore, *bhawanee* in	390
cases seen at	390
evidence recorded at	390
khoorah in	390
outbreak of cattle plague in ...	284
rinderpest in	390
visit to	390
Narrative of cattle disease in Madras	543
Narsingpore, statement of cattle disease in ...	589
Nassick, cattle murrains in	561
report from the Collector of	561
Nazeerah, history of cattle plagues in	302
Neema of Kamalia, evidence of	493
Nemy Shitanath Marik, evidence of	75
Nepal, cattle disease in, history of	607
Nerboo, evidence of	259
Nischindpore, statistics of cattle disease in ...	624
Noakhally, cattle disease in	149
district of	149
Nobin Chunder Chatterjee, evidence of ...	84
Nobye Bhuttacharjee, evidence of	186
Noonnugger, cases seen at	111
North-Western Provinces	339
Nothangram, village of, visited	170
Nowgong, buffalo importation in	334
cattle disease, symptoms of	279
Nuddea, information regarding cattle poisoning in ...	653
Nullah, cattle diseases in	232
sanitary measures in	233
segregation suggested in	233
Number of cattle, effect with prevalence of murrain	vii
Nundlall, evidence of	383
Nundpore, case seen at	407
foot and mouth disease in	401
visit to	401
Nusropore, evidence recorded at	187

O.

Obhoy Haldar, evidence of	87
O'Connor, Dr., on symptoms of disease in Nowgong	279
Odro, symptoms of	561
Oilmen's sheds, Manicktollah, Calcutta	72
Oolooberiah fair, visit to	188
foot and mouth disease in	188
Oolpar, cattle diseases of	560
Oonao crime return, extract from	521
district of	521
evidence recorded at	526
summary of returns of cattle disease from ...	521
Ooreyah, cattle murrain in	201
village in Hazareebaugh	201
Orders, Military, in Debrooghur Station ...	307
to mouzadars regarding cattle disease ...	278
Origin of *bhawanee*	389
in Moniejar	383
cattle disease in Diamond Harbour ...	52
Mymensing ...	141
Sylhet	139
plague in Benares	363
debee	400
disease in Debrooghur	300
Khena	187
Pootna	186
Rameree	382
gootee in Akna	166
quarter-ill in Jessore	123
rinderpest in Lahoreemow	385
Rampore	385
Orissa division	131
cattle poisoning in	661
historical sketch of cattle plagues in	133
index of records	131
Oudh, historical sketch of cattle diseases in ...	505
index to	501
province of	501
Outbreak of cattle disease in Darjeeling ...	255
Ekdulla	393
Golaghat	278
Luchmunpore ...	231
Luckimpore ...	277
Munjunpore ...	394
Goorgaon ...	451
periods of, of *mān*	451

P.

Paharpore, cases of murrain at ...	524, 526
cattle breeding in ...	525
disposal of hides in ...	525
pasturage of	525
murrain, history of ..	525
visit to	524
Paira in Vadala	467
Palamow, cattle murrain at... ...	197
report from	197
statistics of cattle plagues in	197
Palapooker, cartmen of	179
puschima in	180
rinderpest in	180
visit to	179
Panchunnee, a disease in Seebsaugor ...	279
Pardee, information regarding cattle disease in	560
Parsons, Major J., letter from ...	463
Pasturage of Moniejar	383
Paharpore	525
state of	118
want of, in Hummeerpore in 1869 ..	385
Pasture in Jhung, want of	498
land of Chooadangah, want of ...	105
remarks on, as a cause of plague ...	xi
Patch, Esq., J., information from, of Sylhet ...	139
Pathalee, case seen at	402
evidence recorded at	402
sitlah in	402
Pathara, evidence recorded at	383
Patna, district of	220
division of	205
cattle poisoning	669
historical sketch of cattle plagues in ...	209
index of records	205
summary of diseases in	220
Peer and *bhooknee* contrasted	477
history of	492
seasons of	492

	Pages.
Peer in Shaik Boreham	491
syal and *matah*, identity of	492
symptoms of 477,	491
Pema Goalla, evidence of	455
Penang epizootic	41
Perks, W., Mr., station butcher of Benares ...	349
Pertabgurh, district of	516
information regarding cattle diseases ...	517
poisoning of cattle in	736
statistics of cattle diseases	517
summary of returns of cattle diseases ...	518
Pheepree and pleuro-pneumonia, identity of ...	555
and *zaloolyunb*, identity of	555
cause of	555
definition of	555
evidence regarding	456
mortality from	456
nature of	492
symptoms of 456, 492,	555
treatment of	555
Phurtee, symptoms of	590
Playfair's, Major, report on diseases of cattle in Chindwara	587
Pleuro-pneumonia in Shekopoorah	478
remarks on	xv
Plowden, Esq., W. C., letter from	409
Captain, report on cattle disease, Hoshungabad	588
Poisoner, a habitual	655
Poisoning cattle, general reports ... 639—	737
agents for	648
motive for	648
source of	650
symptoms of	650
of cattle	iv
at Alipore, precis of	660
Case No. 380 of 1869, Alipore, tried by W. H. Verner, Esq. ...	657
Case No. 95 of 1869, Alipore, tried by Baboo Taruck Nauth Mullick	658
Case No. 5 of 1870, Alipore, tried by Baboo Cally Churn Ghose	658
at Barripore	661
Benares	351
Bood-Bood	665
Culna	665
Case No. 13 of 1870, tried in Dum-Dum	658
Case No. 83 of 1870, tried in Dum-Dum	659
in Midnapore for years 1865, 1866, 1867 and 1868 ...	667
Monghyr	680
Belgatchee	109
Dinapore	670
Poorah	659
Racona	185
Pootna	187
decision of Moulvie Shah Mahomed Isheq	679
report by Dodd, Captain ...	728
W. H. D'Oyly, Esq. ...	673
C. B. Garrett, Esq. ...	674
W. B. Hudson, Esq. ..	674
in Allahabad	714
Aroonea	528
Azimghur	703
Barh sub-division ...	671
Baraset sub-division ...	660
Belooria	246
Bengal, Behar and Orissa, index to	639
Bhaugulpore	679
Cowriram	218
Cuttack	661
Chota Nagpore	667
Chumparun	674
Diamond Harbour ...	89
Ghazeepore	709
Jenidah	655

	Pages.
Poisoning of cattle in Jessore	120
Jounpore ... 715,	718
Manbhoom	668
Meherpore	653
Mirzapore	709
Modhoobanee	227
Monghyr	680
Patna	669
Rampore	385
Tengra Maree	107
Twenty-four Pergunnahs ...	657
precis of evidence of ...	645
prevalence of	646
in Cuttack ...	661
remarks on	xiii
in N. W. Provinces, index to records	683
Poisons, names of	648
Pokna and *khoorah* contrasted	527
Poorah, cattle poisoning in	659
Pooree, statistics of cattle disease	627
remarks on ...	627
Poorno Chunder Ghose, report on cattle diseases in Manickgunge	141
Pootna, evidence recorded at	186
rinderpest at	186
Porch, Esq., R., on cattle disease, Mymensing ...	141
Pormanund Ghose, evidence of	170
Port Blair and Nicobar Islands, proceedings of first committee in ...	599
rinderpest in ...	597
statement of cattle disease in ...	597
statistics of cattle disease in .	597
Port Canning cattle diseases	82
Posanga, a disease in Shahabad	215
Post-mortem appearances of three cattle at Dhappa ...	69
a cow at Dhappa ...	69
Hissar cattle murrain...	452
murrain in Canara ...	557
reported by Mr. H. Farrell, v. s. ...	59
at Lahore seen by Cattle Plague Commissioners ..	480
examinations made by Cattle Plague Commissioners	908
Pound Funds, reports on ... ... 747—	817
Pratt, Esq., W. D., letter from, relating to Sasseeram	213
Precis of evidence regarding cattle poisoning ...	645
Presidency, Bombay	547
Madras	531
Pritram Haldar, evidence of	87
Prevention by sanitary arrangements ...	123
of cyst disease	486
Preventive measures in Assam required ...	305
Lucknow	523
recommended	353
treatment, description of	xxii
Price of cattle, cause of increase in ... 171, 318,	391
increased	327
in Assam	325
Debrooghur	318
at Dum-Dum fair	65
in Jhung	498
Kheree	513
Khokar	494
at Kidderpore fair	64
Madarkhat	234
Oolooberiah fair	189
Wooltadanga fair	64
Pritchard, W., Lieut, evidence of	91
Probhoram Haldar, evidence of	87
Proceedings of the Indian Cattle Plague Commissioners	iv
Protection, a preventive measure	xxiii
Province of Oudh	501
Provinces, Central	577
North-Western	339
of the Punjab	441

Pages.

Puddobela hât visited 111
cattle diseases of 111
Pukka, a disease in Moradabad 427
symptoms of 422
Punch Mehals, geographical position of ... 559
history of cattle disease in ... 559
Punjab, historical sketch of cattle plagues in ... 445
index to 441
provinces 441
rinderpest in 386
statement regarding cyst-infected meat in ... 482
Punsoor, evidence recorded at 168
previous outbreaks of cattle diseases ... 169
Purneah, district of 227
hide trade in 228
Purulia, cattle disease in 198
cattle hospital 199
Purves, Esq., H. R., Civil Surgeon, Kamroop ... 274
Pusaih Aheer, evidence of 526
Puschima and *gootee*, identity of 123
attack of 71
deaths from, in Akna 166
history of 107
in Koolchara 105
Palapooker 180
season of 107, 113
symptoms of 104, 105, 113
treatment of 107
varieties of 107

Q.

Quarantine adopted 386
in Assam suggested 306
recommended 123
Quarter-ill in Jessore 123
origin of 123
remarks on xv
Quinnel, Dr., remarks of 473

R.

Racona, evidence recorded at 185
visit to 185
Rainey, Esq., H. J., information from 125
statistics of cattle diseases by ... 128
Raipur, cattle diseases of 589
report on cattle diseases by Captain Lugard 589
statistics of cattle diseases in 590
Rajah Narendra Krishna Bahadoor, evidence of ... 79
Rajchunder Moochee, examination of 98
Rajpoor, statistics of cattle diseases in ... 140
Rajshahye division 237
historical sketch of cattle diseases 239
index of records of 237
Rakhal Doss Mookerjee, report by 86
Ramchurn Misree, evidence of 176
Ramdhone Mundul, evidence of 86
Paul, evidence of 74
Rameree, *bhawance* in 381
evidence recorded at 381
Ramgovindo Sen, evidence of 170
Ram Narain, evidence of 525
Rampore, evidence recorded at 385
foot and mouth disease in 385
rinderpest in 385
visit to 385
Ramsunker Sein, letter to Magistrate, Nuddea ... 96
Ranaghat, prevalence of cattle poisoning in ... 653
Rawulpindee, cyst-infected meat in 482
division 199
historical sketch of cattle plagues in ... 449
Raze, symptoms of 514
Recommendations of the Indian Cattle Plague Commissioners xxviii
Recovery from *bhawanee*, rate of 389
jahani 327
Reilly, Esq., H. M., letter of 142

Pages.

Reeves, Major J. G., report on cattle poisoning of Tirhoot 675, 677
Remarks on Kurnaul murrain by H. Dawson, Esq., v.s, 151
statistics of cattle disease in Assam . 629
Calcutta ... 619
Chooadanga 623
Diamond Harbour... 620
Pooree ... 627
Repression, a preventive measure xxiv
Reree, cases seen at 412
rinderpest in 112
rorah in 413
visit to 412
Rewati Aheer, evidence of 527
Rhotas, small-pox or *sitlah* in 213
Richards, Esq., V., letter from 190
Rinderpest affecting other animals xxviii
among Dum-Dum cattle 65
at Cawnpore in 1868 386
dairies in 1863... .. 387
Eley 180
Hissar 386
Meerut 386
Mirzapore 181
cattle affected with, used for food ... 67
contagiousness of xiv
in Arcoor, origin of 187
Aurpore 188
Bankipoorah 191
Belkona 246
Belooria 219, 246
Benares 347
Bood-Bood 184
Calcutta 64, 70, 188
Cawnpore 386
Cheet Isapore *382*
Chundowkie *384*
Commissariat cattle, *Benares*, statement of *361*
Coocher 384
Degnugger 184
Gumeshpore... 301
Kakoorie 387
Katgora 179
Koka 478
Koolchina 104
Kurseong 258
Lahore mow 385
Morung 227
Narainpore 390
Nusropore 187
Palapooker 180
Port Blair and Nicobar Islands ... 597
Punjab 386
Rampore 385
Reree 112
Satraompore 391
Siamugger 101
Soobeydar-ka-Poorwa 391
Telongol 217
Vadala 467
Indian and European, identity of ... xviii
medical and veterinary opinions on ... xviii
treatment of xxi
relation of, to human diseases ...xviii
remarks on xvii
Rivers, a condition affecting prevalence of murrain ... vi
Roads, affecting the prevalence of murrain ... vi
Robertson, Esq., J. C., letter of ... 394
Robinson, Major J., letter from 457
Rohilcund Division 415
historical sketch of cattle plagues 119
index to 115
Roomra, symptoms of 560
Roopgunge, statistics of cattle diseases ... 140
Rorah, a disease 113
deaths from 151
infectiousness of 413
in Hissar 156

	Pages.
Rorah in Kurnaul	451
spread of	413
symptoms of ... 413, 422, 451, 456,	459
treatment of	413
Ross, Dr., on cysts and tapeworms	484
Esq., H. G., letter from	414
Roy Bareilly division	507
history of cattle diseases in ...	507
poisoning of cattle ...	736
Roy, Jogodishnath, Baboo, replies to queries of Cattle Plague Commissioners ...	149
Tariniprosad, Baboo, letter of, to the Magistrate, Mymensing	142
Rungpore, district of	249

S.

Sadon Chunder, evidence of	322
Sadoo Moochee	98
Sagur, history of cattle plagues in	585
Saharunpore, district of	412
Sahebgunge visited	235
Sale of cattle prohibited, Debrooghur	290
diseased cattle, Assam	301
skins, prohibition, effect of	653
Sambalpue, cattle diseases of	590
district of	590
Sanders, Esq., R., letter from	423
Sanitary measures 60,	173
required in Assam ... 305,	756
in Khoolna	128
adopted, North Luckimpore ...	289
in Nullah	233
Tipperah	146
treatment of epizootics	747
Sarun, district of	222
information on cattle poisoning in ...	674
statistics of, from 1866 to 1870 ...	222
Saseeram, small-pox or *sitlah* in	213
Sattara, information regarding cattle disease in ...	576
Satkheera, statistics of cattle disease at ...	622
Satmundy, evidence recorded at	187
Satraonpore, rinderpest in	391
visit to	391
Sawmha, symptoms of	589
Scalkote, diseases of cattle in	470
statistics of cattle disease in	470
treatment adopted in	470
Season of cattle plague in Jhung	498
diseases 151,	162
disease in Bood-Bood	182
Hazareebaugh	200
Katcheekatta	112
peer	492
puschima	113
Secrole, cases seen at	365
visited by Cattle Plague Commissioners ...	365
Seebsaugor, buffaloes, importation of	335
disease, nature of	279
district of	277
hospital at	301
mouzadars instructed	278
outbreak of cattle plague in ...	277
rinderpest in	301
tabular statement of cattle disease in ...	280
Seelee, symptoms of	560
Seeor, symptoms of	563
Seetakund, villages affected...	152
Seetapore division, history of cattle plagues ...	505
Seetlah, contagiousness of	402
in Pathalee	402
symptoms of	561
Segregation, effect of	202
in Punsoor	168
not attempted in Tipperah ...	148
of cattle	232
practised in Bijnour	421
Sehwan, history of cattle plagues in	563
Seoni, cattle disease in	586
Serpan, symptoms of	561
Shabundur, Deputy Collector's report of ...	564
history of cattle diseases in ...	564
statistics of cattle diseases in ...	564
Shahabad, cattle poisoning in	673
district of	213
Shaik Boreham, cases of cattle disease	491
evidence recorded at	491
visit to	491
Mahomed, evidence of	493
Shajehanpore, breeding of cattle in	422
cattle disease of	423
herding of	422
murrain in	422
condition of cattle of	422
district of	422
foot and mouth disease in ...	423
history of cattle plagues... ...	423
housing of cattle in	422
statistics of cattle plagues ...	423
uses of cattle in	422
Shakespear, Esq., A., on Benares outbreak ...	353
Sheep and goats of Bunni, liability to attack ...	526
Sheep, disease of, Cawnpore	386
liable to *gootee*	115
Sheik Munno Khansama, agreement of moochees with	230
written deed of ...	228
Shekopoorah, cases examined at	478
of rinderpest at	479
cattle diseases in	479
market in	478
daba in	479
disposal of hides in	479
evidence recorded at	478
feeding of cattle in	478
grasses of	478
mortality from cattle plague ...	479
Sheriff, Esq., R., evidence of	82
Sheriff, Esq., W., evidence of	103
Shewchurn, evidence of	401
Shikarpore, history of cattle plagues in ...	565
report of, by Civil Surgeon... ...	554
statement of cattle diseases in ...	565
Shittaram Aheer, &c., evidence of	392
Shobanundo Promanick, evidence of	85
Sholapore, information regarding cattle diseases in ...	575
Sianuggur, breeding at	402
evidence recorded at	401
khoorpucca in	402
rinderpest in	401
Sikhim campaign, rinderpest during, in Darjeeling...	258
foot and mouth disease in	258
Silt and *seeor*, symptoms of	566
Simson, Esq., F. B., letter of, to Secretary, Bengal Government	139
report of, on cattle poisoning	664
R., on Benares outbreak... ...	353
Sind, information regarding cattle murrains in ...	563
Sindoree factory, information obtained at ...	113
Singbhoom, district of	203
matah in	196
Sirruk, symptoms of	455
treatment of	455
Sitlah, symptoms of	402
Skinner, Captain R. M., report on cattle poisoning of Tirhoot	676
Slaughter-house at Chitpore	50
Kidderpore visited	66
Kurriah	49
visited	67
Narcoldanga	50
Talligunge	50
Tengra visited	66
Slaughter-sheds of Calcutta in 1844	47
Small-pox, report on, in Calcutta	41
in cattle near Benares	352
Palamow	198
or *sitla* in Saseeram Pergunnah ...	213
Smith, Esq., A., Magistrate of 24-Pergunnahs, letter	63

	Pages.
Sobokar, causes of	286
in Luckimpore	286
season of	286
Soil, influence of, in spreading murrain... ...	vii
of Debroogurh	319
Khokar	493
Sonada, evidence recorded at	261
Sonthal Pergunnahs, district of	231
Soobedarpore, *bhawanee* in	389
case seen at	390
cattle feeding in	389
housing in	389
evidence recorded at	389
former attack of *bhawanee* ...	389
importation of cattle in	389
khoorah in	389
visit to	389
Soobedar-ka-Poorwa, cases seen at	391
foot and mouth disease in ...	392
hide trade in	391
rinderpest in	391
visit to	391
Sookea's Street, evidence recorded at	73
Soopa, information regarding cattle disease in ...	560
Source of cattle disease in Bunthra	527
Dohalee	247
chechuck	400
disease at Noonnugger	112
matah	366
murrain in Aroonea	528
Paharpore	525
poisoning	650
rinderpest	401
Sparks, Esq., H. J., letter from	516
Spence, Colonel J. K., report of	585
Spread of disease	301
foot and mouth disease	524
rorah	413
vedun	409
bussunto	179
Sreenibas Gope, evidence of	179
Stalkartt, Esq., J., evidence of	78
Stanley, Esq. (v. s.), E., on cattle disease, Benares ...	358
Starvation, cause of mortality in Humeerpore ...	379
of cattle in Baragow Tateea ...	387
symptoms of	384
Statement of cattle diseases in Ahmednugger ...	571
Central Provinces ...	583
Chindwarah ...	587
Dharwar ...	568
Hoshungabad ...	588
Jullunder ...	464
Mulliabad Tehseel ...	523
Narsingpoor ...	589
Port Blair ...	603
and Nicobar Islands...	597
Shikarpore ...	565
poisoning cases	647
mortality among cattle in Humeerpore during scarcity of pasture ...	380
from cattle diseases in Etah	103
rinderpest among Commst. cattle, Benares	361
regarding *battan* in Bograh ...	218
bussunto in Bograh ...	218
carcasses brought to Dhappa ...	68
cattle disease in Allahabad from April to December 1870.	375, 377
Banda ...	375
(abridged) regarding cattle diseases of Furruckabad	403
plague in Benares from January to April 1870 ...	361
showing localities affected by cattle disease in Benares	358
Statistical statements, index to	612
Statistics of cattle diseases, by Baboo Joykissen Mookerjee	175

	Pages.
Statistics of cattle diseases in Assam	628
Baraset	622
Belgaum	575
Chooadangah ...	623
Coompta	568
Darjeeling ...	256
Debroogurh ...	289
Diamond Harbour ...	620
Dinagepore ...	249
Ferozepore ...	475
Hatizabad Tehsil ...	450
Hazareebaugh ...	200
Honore	568
Hurdui	509
Jawlinghur ...	411
Jeeruk	564
Kheeree, for 1867 ...	514
Light Infantry, 44th, Assam... ...	630
Luckimpore ...	286
Lullutpore ...	439
Madarkhat ...	631
Moradabad ...	427
Mulliabad ...	523
Nanpara Tehseel in Baraitch ...	516
Nischindpore ...	624
Noonnugger ...	112
North Luckimpore ...	288
Ooreyah	201
Palamow	197
Pertabgurh ...	517
Pooree	627
Port Blair and Nicobar Islands ...	597
Purulia	198
Raipur	590
Sarun, from 1866 to 1870	222
Satkheerah ...	622
Sealkote	470
Seetakund and Meer-ka-serai	152
Shahundur ...	564
Shajehanpoor ...	423
Siddapore	568
Sirey	568
Soopa	568
Sylhet	139
Umballa	459
Upper Sind Frontier ...	566
Yellapore	568
remarks on, by the Cattle Plague Commissioners	xx
Stewart, Dr D., extract from report on small-pox ...	41
Stock, how kept up	172
of Assam	317
Debrooghur	320
Aroonea	528
Humeerpore	381
Kakoorie	387
Rameree	381
Shajehanpoor	422
Stoubor Chunder Sircar, evidence of	85
Stud cattle, epizootic among	452
Sultanpore, summary of cattle diseases, returns of ...	519
village of, visited	169
Sumara, symptoms of	567
Summaroo, symptoms of	563
Summary of cases of cattle poisoning in Lower Bengal	652
of cattle disease in Ceylon	605
Chumparun ...	221
Etah	403
Fyzabad division ...	406
returns of cattle plagues in Boolundshuhur	410
Kheree	511
Lucknow	529
Moorshedabad	423
Oonao ...	521

Pages.

Summary of returns of cattle plagues in Pertabgurh... 518
Seetapore 515
Rutnagherry 572
Sultanpore... 519
Surat, information regarding cattle murrains in ... 560
Suth, a disease in Montgomery 489
mortality from 492
symptoms of 489, 492
treatment of 492
Syed Sekawut Hossein, evidence of 276
Syal, *peer*, and *matah*, identity of 492
Sylhet, district of 139
Symptoms of *avroe* 559
balia 559
bhawanee ... 381, 382, 384, 389, 390
bhooknee 492
bupra 589
burra azar 539
burradook 414
burree 510
bussunto 56, 173
Calcutta epizootic 41
cattle diseases 162, 290, 149, 152, 286
in Baraitch ... 516
Canara 556
Chindwara ... 587
Diamond Harbour ... 59
Ghazeepore ... 367
Golaghat ... 279
Gwalior 424
Humeerpore ... 379
Hissar 452
Kurnaul... ... 454
Madras 544
Mymensing ... 141
North Luckimpore ... 288
Seebsaugor ... 279
Sylhet 139
chechuck 490
chendooroga 567
chera 422
chopchopia 256
chupka 422, 528
chye 589
debee 382
dhukka 492
ghootko 565
ghorey 422
ghutt 566
goli 456
gooldia 456
gooldun 456
gootee 212
gulsondee 560
guttiar 564
hepbaj 560
herriberri 574
hija 323
hirey byani 575
huluk 456
jahani 327
jaria 455
kalberi 574
karevao 555
khoorah 389, 391, 411
khoorkhoot 559
khoorpucca 402
khurchun 560
khurmund 561
koorug moorug 464
lag 492
laga roga 567
maha roga 567
mai 554
manoon 477
matah 41, 196, 382
moopaung 540

Pages.

Symptoms of *mooslya* 558
mowaso 559, 560
mowassa 563
mukhuri 490
murrain 199, 201, 402
in Bareilly 425
Bijnour 521
Dantowlie 526
Debrooghur 322
described by J. Corbyn, Esq. 426
Col. Wroughton 426
in Hazareebaugh ... 200
Lullutpore 439
Palamow 197
murree 509
odro 561
peer 477, 491
pheepree 456, 492, 555
phurtee 590
poisoning 650
pukka 422
puschima 167
raze 514
roomro 560
rorah ... 413, 451, 456, 459
rorey 422
sawmha 589
seelee 560
seeor 563
seeor and *silt* 566
seetlah 561
serpan 561
sitlah 402
sirruk 455
sumara 567
summaroo 563
suth 489, 492
thuddee 563, 567
unchalio 560
vedun 409, 411, 412
zalooljunb 555
zardozi 555

T.

Tabular statement of murrain in Futtehpore ... 393
cattle disease in Golaghat ... 281
Luckimpore ... 283
Moradabad ... 429
Seebsaugor ... 280
Allahabad ... 395
showing mortality from cattle disease in Umritsur ... 471
Taltolah, cattle diseases of 110
Tameezooddeen, Jemadar, evidence of 85
Tanna, information regarding cattle disease in ... 559
Tannery, Government, Cawnpore, visit to ... 388
Tapeworm in Lahore 480
source of 484
Tariney Churn Chuckerbutty, evidence of ... 180
Tatee, cattle markets in 387
evidence recorded at 387
loss of cattle by starvation in 387
village, visit to 387
Taylor, Mr. T. L., evidence of 75
Esq., V. T., on cattle poisoning ... 678
Esq., W. C., judgment of, in a case of cattle poisoning 662
Tazpore, *chechuck* in 400
evidence recorded at 400
visited 400
Teil, Mr., evidence of 45
Telongol, rinderpest in 247
visit to 247
Tenchung Bhootea, evidence of 258
Tendook Bhootea, information given by ... 255
Tengra, cattle diseases in 107
Terriah, *debee* in 401

Pages.

Terriah, visit to 401
Thacker's, J., Esq., v. s., replies to queries of Cattle Plague Commissioners 542
Thakoor Mulla, evidence of 385
Thibet, disease of cattle in 258
Thompson, Esq., R., on sanitary measures ... 749
Thornhill, Esq., E. B., report of cattle disease in Humeerpore 378
Throat disease, remarks on xvii
Thuddee, symptoms of 563
Thurr and Parkur, cattle diseases in 567
Tighe, Major J. S., letter from 459
Tilli, nature of 455
Tipperah district 146
Tirhoot, cattle disease in 213
poisoning in 675
district of 212
gootee in 212
Topography, a condition affecting murrains vi
Treatment adopted in Hissar murrain 453
Madras, by J. Thacker, Esq., v. s. 544
by J. Corbyn, Esq. 426
directions as to 124
mode of 231
nature of 60
of *bhooknee* 498
burradook 414
bussunto 173
in Debrooghur, by H. Farrell, Esq., v. s. 292
of diseases 124, 149
disease in Canara 557
Dantowlie 526
Dohalee 247
Durrung 299
Ichak 201
Katcheekatta ... 112
Kheeree 514
Koonch ... 438
Kurnaul . . 231, 286, 454
Luckimpore 282
Madarkhat 328
Scalkote 470
Sylhet 139
flooko 255
gooldia 456
karevao 555
koorug moorug 464
mai 554
matah 366
mohara 555
mokh 458
moopaung 540
moopucca 413
murrain 201
pheepree 555
rinderpest 386, 823
remarks on, by Cattle Plague Commissioners... xxi
rorah 413
sirruk 155
suth 492
urnvao 556
vedun 409
zalooljunb 555
suggestions regarding, by Civil Surgeon of Canara 557
Tripe, Esq., J., report on cattle poisoning ... 678
Taffel Ahammed, evidence of 184
Tucker, Esq., H. C., on cattle poisoning ... 686
Turner, Col. A., on Benares outbreak 355

U.

Ukka, information regarding villages of ... 424
Umballa, cattle disease in 458
return of 460
division 458
historical sketch of cattle plagues in 447
Umballa, statistics of cattle diseases in... .. 459
Umbica Churn Ghose, evidence of 168
Umritsur, cattle market of 468
plague in 467
division 467
historical sketch of cattle plagues in 447
tabular statement showing mortality from cattle disease in ... 471
feeding of cattle in 468
return of cattle that have died in ... 467
Unchalio, symptoms of 560
Upper Sind Frontier, cattle disease in 566
statistics of 566
Urnvao and cholera similar 556
a disease in Shikarpore 556
treatment of 556
Urquhart, Esq., E. D., report on cattle poisoning by 678
Uses of cattle 172, 287, 316
319
in Debroogurh 115
Hatikatta 493
Khokar 284
Luckimpore 126
Khoolnah 422
Shajehanpore 478
Shekopoorah ... ...

V.

Vaba in Bijnour 524
Vaccinia 41
Vadala, cattle diseases of 467
evidence recorded at 467
paira in 493
Vair, history of 493
identity with *seetlah*... viii
Value of cattle in relation to cattle plagues ... 409
Vedun, cases of 411
contagiousness of 409
deaths from 411
infectiousness of 409
spread of 409, 411, 412
symptoms of 409
treatment of 187
Velayet Hossein, evidence of xxvii
Veterinary education, necessity of xxviii
school 575
Vishnoo Purushram's report ... 164 166
Visit to Akna 187
Amoor 188
Anurpore 528
Aroonea 165
Baloregunge 401
Bankipoorah 387
Baragow Tateea 247
Basbelooria 245
Beercoonda 108
Belgatchee 246
Belkona 247
Belooria 184
Bool-Bood 70
Byres, Calcutta 71
Manicktollah, near Calcutta ... 388
Cawnpore commissariat shed 386
station 411
Chundpore 384
Coocher 217
Cowriram 384
Chundowkie 184
Deegnugger 69
Dhappa platform 409
Dhunowra 217
Dohalee 106
Dowlut Dyar 183
Dukinkhara 401
Fukeerpore 400
Gowrie 114
Hatikatta 411
Jawlinghur ... ...

	Pages.
Visit to Joypoor	169
Kakoorie	387
Kakoowara	458
Kamnara	181
Katchakatta	112
Kurseong	256
Lahoreemow village	385
Mackalal	86
Milchee	169
Mirzapore	181
Mordaha	365
Narainpore	390
Noonnugger	111
Nundpore	401
Oolooberiah fair	188
Paharpore	524
Palapooker	179
Purulia	86
Puddobela Hât	111
Rampore	385
Reree	412
Sahebgunge	235
Satraonpore	391
Secrole	365
Shaik Boreham	491
Soobedarpore	389
Soobedar-ka-Poorwa	391
Taltollah	110
Tatee	387
Tazpore	400
Tengra Maree	107
Terriah	401
Yakoobpore	411

W.

	Pages.
Walker's, W., Esq., M. D., report on cattle poisoning	726
Walore, information regarding cattle murrain in ...	561
Westland, Esq., J., letter of, to Commissioner, Presidency Division	119
White, Esq., J. B., Assistant Surgeon, measures prescribed by	307
evidence of ...	309
J. P., letter from	438
Mr. J., evidence of	260
Willock, Esq., H. D., report of, on murrain in Boolundshuhur	409
Wooltadanga, cattle brought from	64
fair of	63
sheds	63
Woozeer Bepari, evidence of	66
Wroughton, Major, letter from, on foot and mouth disease	410
Colonel, symptoms described by ...	426
Wynch, H. P., Major, report on cattle disease in Darjeeling	255

Y.

	Pages.
Yakoobpore, cases seen at	411
vedun in	411
visit to	411
Yâks of Thibet	259
Yeatman, Esq., R., report on murrain, Munjunpore	394
Yor (rinderpest) in Thibet	258
symptoms of	259

Z.

	Pages.
Zalooljunb and *pheepree*, identity of ...	555
symptoms of	555
treatment of	555
Zardozi and *kuluji-ka-durd*, identity of ...	555
symptoms of	555

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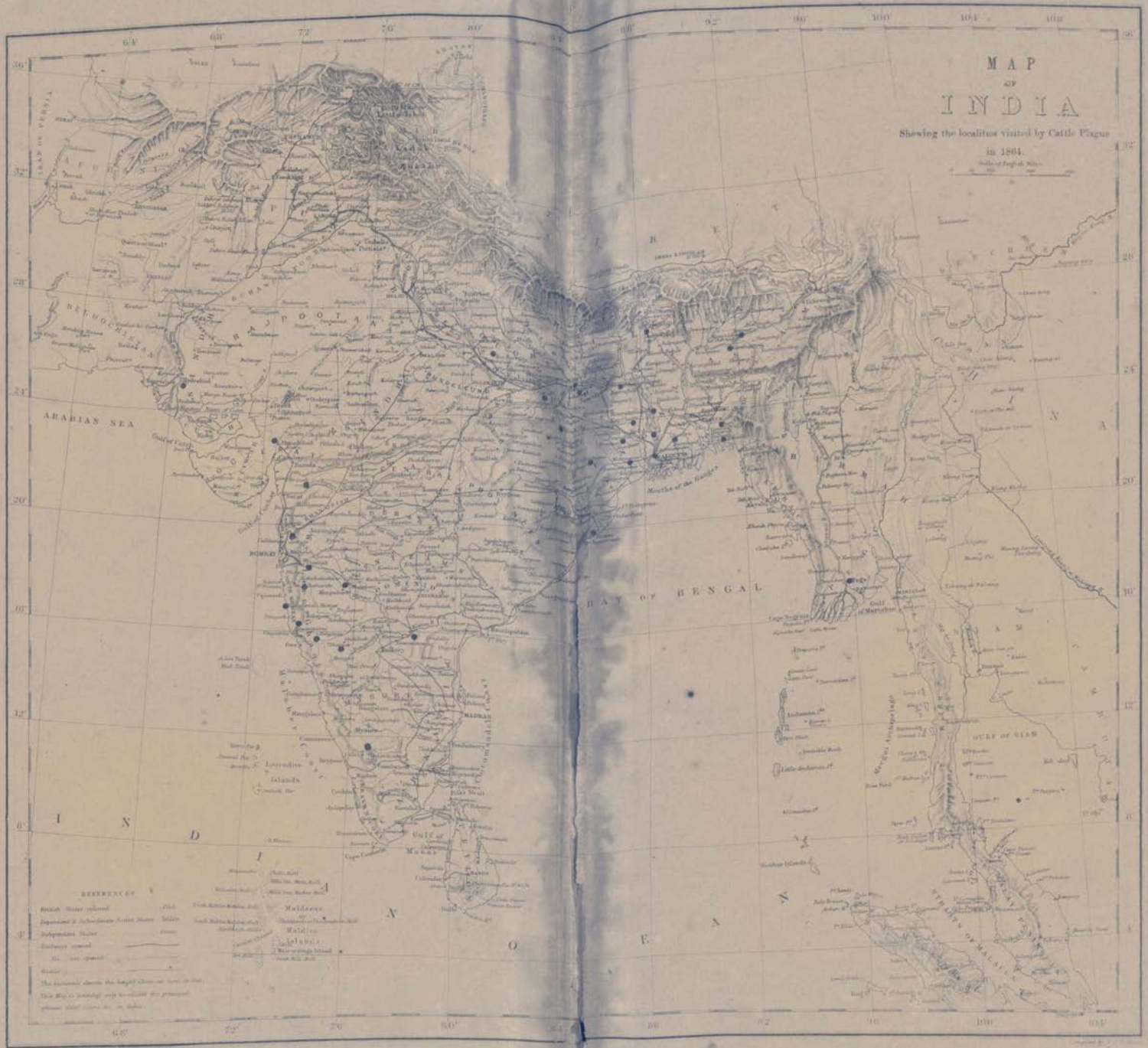
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OF
INDIA
Shewing the localities visited by Cattle Plague
in 1864.
ARABIAN SEA
BAY OF BENGAL
GULF OF SIAM
BOMBAY
MADRAS
Gulf of Manar
Gulf of Martaban
Mouths of the Ganges
Maldives
Laccadive Islands
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Shewing the localities visited by Cattle Plague
in 1865
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
GULF OF SIAM
Laccadive Islands
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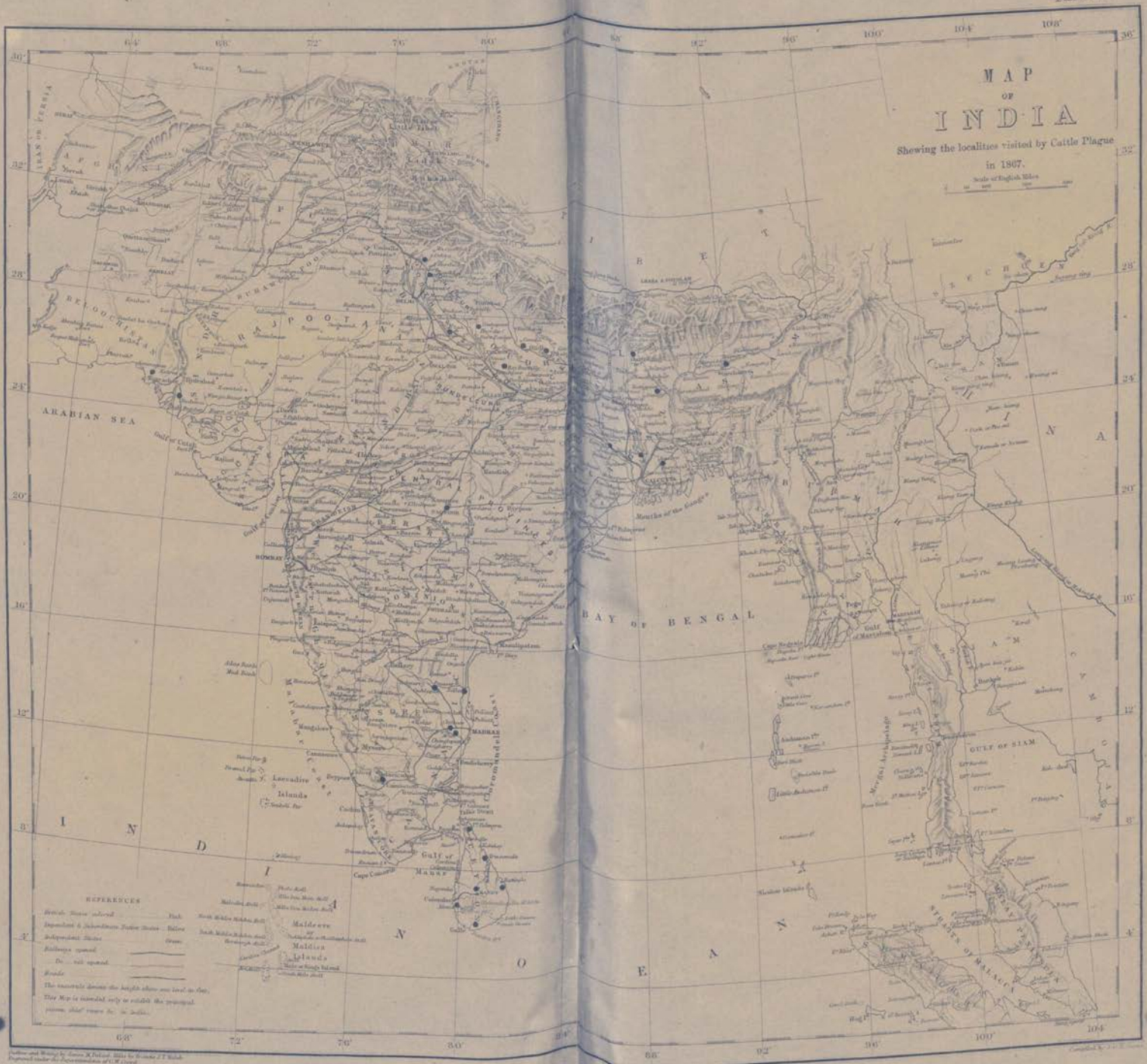

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in 1870.
ARABIAN SEA
BAY OF BENGAL
INDIAN OCEAN
GULF OF SIAM
BOMBAY
MADRAS
Laccadive Islands
Maldive Islands
Gulf of Manaar
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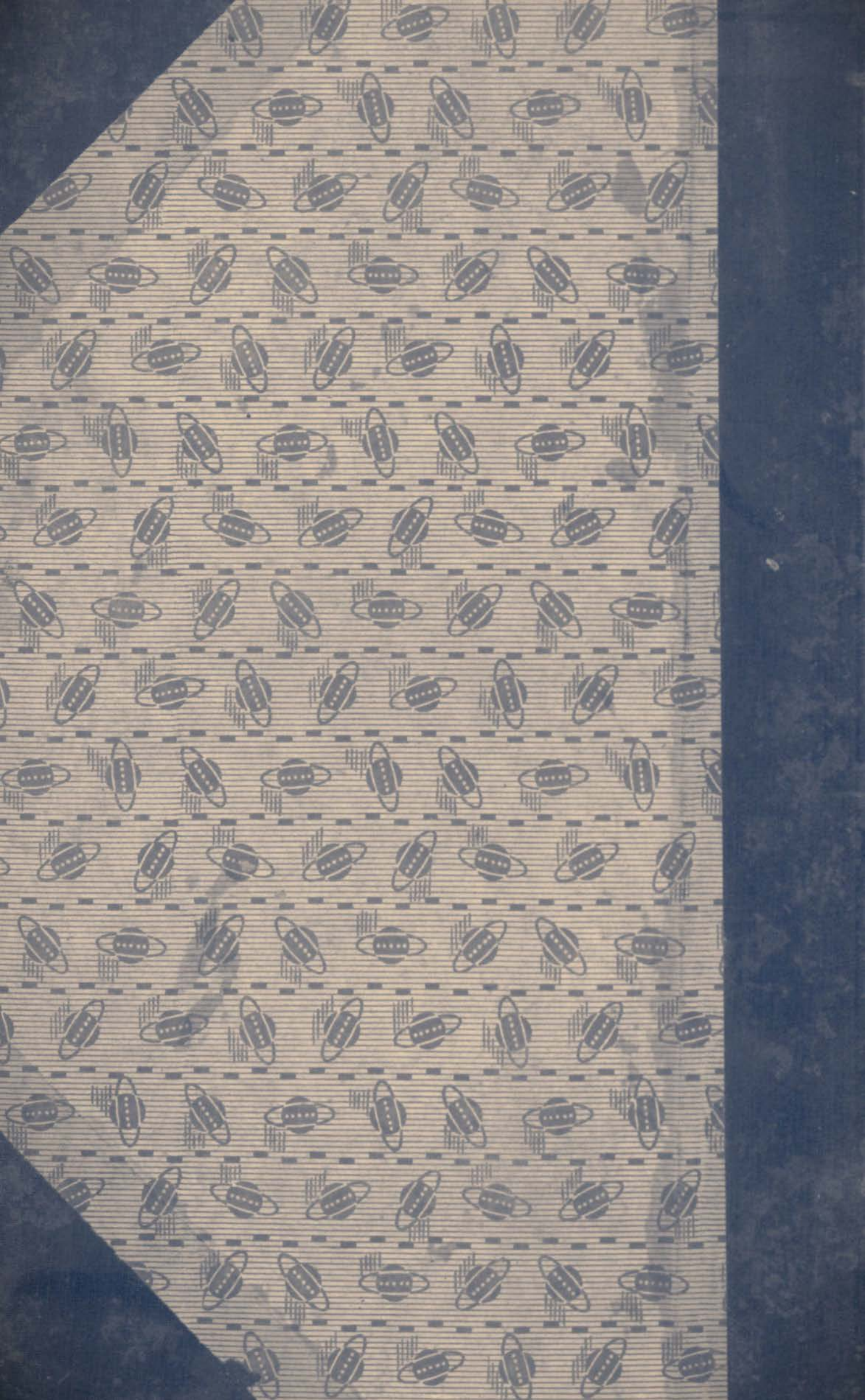
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